THE AMERICAN YEARBOOK

1917

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EDITED BY

FRANCIS G. WICKWARE, B.A., B.Sc.

WITH COÖPERATION OF A SUPERVISORY BOARD
REPRESENTING NATIONAL LEARNED SOCIETIES

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PREFACE

This issue of the American Year Book for the year 1917 is the eighth since its inception. It differs from the other volumes in many details, though in the main it follows the plans originally laid down by the Supervisory Board. The changes in the arrangement of this volume are almost entirely caused by the European War. Every field of human endeavor has been affected to a greater or less degree by the European conflict. No activity of any kind during the year 1917 was beyond the influence of the War. It has been necessary, therefore, to give considerable space to the War itself, to include foreign matters to a greater degree than formerly and to alter the space originally allotted to many of the subjects contained within the volume.

Nevertheless the basic purpose of the work is the same as stated in the original preface to the first volume:

"The American Year Book is intended for the needs of writers and searchers of every kind. Because of its inclusion of scientific subjects, it has been necessary to limit the political and statistical material which is the staple of many annual handbooks; the book does not aim to treat everything that could be useful, but throughout to select from the enormous mass of details those things which, in the judgment of experts in each field, are most significant, most permanent in value, most likely to answer the searchers' questions.

"The American Year Book does not aim to be a rival of other annual publications, either foreign or domestic. Details as to elections, the *personnel* of state and municipal governments, political personalities, societies, and educational, literary, and scientific institutions have deliberately been reduced, in order to make room for material of a kind not found in most of the annuals. The American Year Book appeals first of all to students in all fields, who wish a record of progress, not only in their own, but in other departments of human endeavor. It is intended, also, as a handbook for busy men, editors, contributors, professional men, teachers, scientific workers, engineers, practical and business men, who wish to verify or confirm points that arise in their minds; and to serve as a handy body of reference material settling questions of fact. Throughout the work the object has been to make the volume convenient for the user; hence the Year Book is arranged on a plan entirely unique in publications of this general character. It is intended to make reference easier by subdividing material into departments, by putting cognate subjects into close association, and by liberal cross-references, making it easy to turn at once to the discussions relating to any subject. A full and carefully analyzed index is also provided in order to open up all remote connections and relations of a topic. This

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arrangement by groups of affiliated subjects, instead of haphazard or alphabetical succession of topics, is more convenient, and at the same time more scientific."

The Supervisory Board of representatives of national learned and scientific societies, officially known as the American Year Book Corporation, continues actively to assist in the preparation of the YEAR BOOK. The members of this Board, which originally projected the work, remain individually responsible for the scope and content of the reviews of their respective fields; several are themselves contributors; many have coöperated with the Editor in securing contributors; and all have assisted the Editor with criticism and counsel.

The acknowledgments of the Editor are due, not only to the contributors and members of the Supervisory Board, but also to the many public officials, Federal, state, and municipal, who have courteously responded to requests for statistical and other data, and to the readers who have offered disinterested criticism of previous issues. The Editor welcomes criticism and suggestions from any source on the selection of material and method of treatment, or on the more formal side of typography, make-up, and conveniences for users.

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THE
AMERICAN YEAR BOOK
A RECORD OF EVENTS AND PROGRESS

I. AMERICAN HISTORY

THE SIXTY-FOURTH CONGRESS, SECOND SESSION

EDWARD M. SAIT

Congress and the Executive.—The Sixty-fourth Congress assembled for its second session on Dec. 4, 1916. In his annual message President Wilson confined himself to recommending the passage of certain legislative projects which had already occupied the attention of Congress. These included the Porto Rico Citizenship bill, the Corrupt Practices bill, the Webb bill, permitting American exporters to combine for the purposes of foreign trade, and a bill designed to expand vocational education. Of these the first three had passed the House of Representatives in the previous session. He urged Congress particularly to complete the legislation which he had proposed on Aug. 29 when a strike of 400,000 railroad trainmen was imminent (*A. Y. B.*, 1916, p. 19), that is; (1) to prohibit strikes and lockouts pending a full public determination of the matters in dispute; (2) to empower the executive, in case of military necessity, to operate the railroads and to requisition the services of railroad employees; and (3) to reorganize the Interstate Commerce Commission. The message did not touch on the subject of foreign affairs; but as the session proceeded and the international situation assumed steadily a more menacing aspect the Administration enlarged its legislative programme. It asked for new sources of revenue to meet the increased burden of national defense, for authority to impose a censorship on newspapers, and for drastic legislation to safeguard American neutrality. On Feb. 26, less than a week before the close of the session, the President delivered a message to Congress asking for authority to arm American merchantmen against submarines.

Congress enacted only three of the measures recommended; the Emergency Revenue bill, the Porto Rico Citizenship bill, and the Vocational Educational bill. The collapse of executive influence was emphasized by the President's failure to persuade the Senate to ratify the Treaty with Colombia, a treaty under which Colombia would receive $15,000,000 as recompense for her loss of Panama and the canal zone and join with the United States in expressing regret that anything should have occurred to interrupt cordial relations. The President was most anxious to secure ratification. On Feb. 17 he wrote to Senator Stone, chairman of the Foreign Relations committee, deprecating further delay. The treaty, he said, would not only do justice to Colombia and settle a long-standing controversy, but "we need now and it is possible that we shall need much more in the immediate future all the friends we can attach to us in Central America where so many of our most critical interests center". This appeal did not in any way modify

Republican opposition. Senator Stone, in a public statement, explained that, while Democratic senators stood squarely behind the President, there would be no advantage in pressing the matter, because the required two-thirds vote could not be obtained. Congress also ran counter to the Executive in dealing with the immigration bill. This bill, having passed both houses (*A. Y. B.*, 1916, p. 14), had been subjected to no important modification by the conference committee, and was for the second time vetoed by the President on Jan. 29 (*A. Y. B.*, 1915, p. 405). He condemned the literacy test as constituting "a radical change in the policy of the nation which is not justified in principle. It is not a test of character, of quality, or of personal fitness, but would operate in most cases merely as a penalty for lack of opportunity in the country from which the alien seeking admission came". The provision to admit illiterates who may come to the United States seeking refuge from religious persecution involved responsibility on the part of immigration officials to pass on the laws and practices of foreign governments—an invidious function for any administrative officer to perform and one which "might lead to very delicate and hazardous diplomatic situations". The House passed the bill over the President's veto on Feb. 1 by a vote of 285 to 106; the Senate on Feb. 5 by a vote of 62 to 19. No partisan spirit was revealed; irrespective of party rural members generally favored the bill.

It cannot be said that the President exerted himself less than formerly to make his policies prevail. He kept constantly in touch with the party leaders; he visited the capitol repeatedly to urge forward his programme. Indeed, the activity of executive officers was so insistent as to rouse antagonism in some quarters. On Feb. 24 Senator Lodge said: "There is a persistent attempt going on to efface the powers of Congress. It is not merely the President, it is not merely the cabinet officers; every commission, every head of a bureau, every Jack-in-office dressed in a little brief authority is coming up here trying to take from the Congress of the United States the powers that belong to it."

The apparent decline of executive influence was due to various causes. In the first place the character of certain recommendations did not win the approval of Congress. This explains, at least in part, the failure of the Railroad and Neutrality bills. The President's proposal to prohibit railroad strikes pending a public investigation was denounced by labor leaders. Samuel Gompers, president of the American Federation of Labor, told a Senate committee that if such a law were enacted it would certainly be wiped out in time. "I am fearful how it might be wiped out. It might be by a revolution of feeling, it might be by a revolt." The committee rejected the measure by a vote of 10 to five, three Democrats joining hands with the Republican minority; and on Feb. 9 it reported a bill (resembling one already introduced in the House) which empowered the President to operate the railroads in time of military necessity and which, while not limiting the right to strike, provided for the investigation of labor controversies on railroads and for means of preventing interference with the mails or with interstate commerce during the progress of a strike. The Administration brought forward 14 bills intended to safeguard the neutrality of the United States. In the Senate 10 of these were combined in a single measure which would "punish espionage and acts of interference with the foreign relations, the neutrality, and the foreign commerce of the United States." For three days the bill was attacked, especially by Senator Works, as dangerous to personal liberty; it did pass late in the session (Feb. 20) by a vote of 60 to 10, the minority including Borah, Cummins, Gronna, Kenyon, La Follette, Lane, Lee, Norris, Vardaman, and Works; but no action was taken in the House. The Press Censorship bill, which authorized the President to prohibit the publication of all news touching on matters of national defense, came to a vote in neither house.

In the second place some measures failed, as happens frequently, because of a divergence of views between the two houses. Thus, the attitude of the Senate with regard to waterpower both on the public domain and on navigable streams seemed to the House unduly favorable to private interests; and although the President, conferring with party leaders on Jan. 18, asked them to secure some kind of legislation on this subject, no compromise was agreed upon.

But the chief reason for the failure of the executive programme was that both houses gave much of their time to the discussion of the international crisis and issues arising out of it: the President's peace note of Dec. 18, his address to the Senate (Jan. 22) regarding the bases of a permanent peace, his announcement of the diplomatic rupture with Germany on Feb. 3, and his "armed ships" message.

Congress and the International Crisis.—The President's peace note of Dec. 18 precipitated a long debate in the Senate. Mr. Hitchcock (Neb.), entirely on his own initiative, offered a resolution which endorsed the sending of the note and the request that the belligerents should make a statement of peace terms. The Democratic leaders, though they would have preferred to leave the matter undiscussed, actively supported the resolution because its failure would have suggested cleavage between the President and Congress. Severe criticism came from the Republican side. Senator Lodge maintained that, since the note had so widely been construed as giving support to the German peace move, approval would convey an unfortunate impression. Senator Borah declared that approval would imply abandonment of the historic policy of non-intervention in European affairs. In order to end the controversy Senator Hitchcock accepted a substitute resolution which endorsed, not the sending of the note, but merely the request made in the note. This was adopted on Jan. 5 by a vote of 48 to 17. One Democrat (Martine) opposed the resolution; 10 Republicans (all but two belonging to the radical western wing of the party) supported it. The House became involved in a different way. Transactions on the New York Stock Exchange made it obvious that the contents of the note had become known to certain speculators before reaching the public. Thomas W. Lawson, a Boston financier, charged that the "leak" had occurred for the benefit of officials in Washington who stood close to the White House and the State Department. After an interview with Lawson, Chairman Henry of the Rules Committee said on Jan. 2: "He cannot give me a single name; he cannot even give the names of those charged with cleaning up $60,000,000 in connection with the leak." On Jan. 18, after long controversy, the House empowered the Rules Committee to make an investigation. In the report rendered some five weeks later Lawson's charges were held to be based on "pure imagination, or idle, irresponsible, or malicious gossip". Responsibility for the leak was placed upon two newspaper correspondents; and government officials were exonerated.

On Jan. 22 the President appeared before the Senate and described in general terms the basis upon which the peace of the world ought to be fixed at the close of the war. Republican Senators manifested a desire to have the subject freely debated. Senator Cummins held that American participation in a league to enforce peace (such as he interpreted the President as advocating) would not maintain peace, but involve the country in constant warfare. "To me the thought is full of madness, and the very best that can be said of it is that it springs from an intense desire for a peaceful world, and is bottomed upon a blind willingness to try any expedient, however visionary and hopeless." The resolution providing for a general debate was tabled by a vote of 38 to 30, with only one Democrat (Martine) in the minority.

On Feb. 7 the Senate formally approved the President's course in severing diplomatic relations with Germany. The resolution was introduced by Mr. Stone, chairman of the Foreign Relations Committee, without consulting the Administration. Some Senators, like Underwood (Ala.) considered it ill-advised and ill-timed, but voted for it because its rejection might be misconstrued abroad. Stone himself, though apparently believing that the President should have waited for some overt act, led the Administration forces; on the Republican side Lodge (Mass.) gave energetic support. A feature of the debate was the insistence by many speakers that the issue should be considered as purely American. Borah said: "If I supposed for a moment that the President was in any instance to be forced from his attitude of conducting this nation along neutral lines, I certainly should under no circumstances give my endorsement." The resolution was adopted by a vote of 78 to five, the minority including three Republicans (Gronna, La Follette, and Works), and two Democrats (Kirby and Vardaman).

The Armed Ship Bill and the Republican Filibuster.—During the last days of the session legislative business was delayed by a Republican filibuster, the Senate caucus having on Feb. 23 adopted this course in order to compel the President to call a special session of the Sixty-fifth Congress. While agreeing upon this policy, all factions of the party were not actuated by the same motives. Pacifists like La Follette feared that without the restraining hand of Congress upon him the President might involve the country in war; Lodge and others wished to keep the President strong in his assertion of American rights. For the first two days the filibuster was directed against the Emergency Revenue bill, not because of any desire to defeat that particular bill, but because it happened to come first. Debate ranging afield from the immediate subject touched frequently upon the question of arming merchantmen for defense against submarines. Senator Lodge said that as long as the President pursued an irresolute course, an appearance of dissension, even distrust of the President himself, was natural. His demand that the government should furnish naval guns to merchantmen was supported by Senator Williams (Dem., Miss.), who did, however, condemn the Republicans for filibustering in a time of grave crisis.

On Feb. 26 the President appeared before Congress and recommended the maintenance of an armed neutrality in dealing with unrestricted submarine warfare which, besides checking the operations of the merchant marine, had brought about a situation "fraught with the gravest possible dangers". He asked for authority to supply armament and ammunition to merchant ships and "to employ any other instrumentalities or methods that may be necessary and adequate to protect our ships and our people in their legitimate pursuits on the seas". He also asked for a sufficient credit to cover the cost of such measures and to provide insurance against present war risks.

The Administration itself presented a bill embodying the views expressed in the message—a bill, that is, which gave the executive authority not only to provide defensive arms, but to use such other instrumentalities as might seem necessary. It carried a credit of $100,000,000. In the House various amendments were offered on the Republican side. Cooper (Wis.), ranking Republican of the Foreign Affairs Committee, wished to prohibit the arming of munitions ships; Sloan (Neb.) wished to prohibit the issuance of passports to Americans intending to travel on munitions ships. Both proposals were lost—the first by a vote of 295 to 124, the second 190 to 57. The instrumentalities clause, however, which the Republicans had condemned as too vague, was dropped. In its modified form the bill passed the House on March 1 by a vote of 403 to 13. The minority included two Democrats, one Socialist, and nine Republicans, all except the Socialist coming from western states. Perhaps the chief factor in bringing about such virtual unanimity was the revelation of a German intrigue with Mexico which, in event of war between Germany and the United States, was to receive financial assistance and adjacent American territory as the price of her coöperation. Mr. Flood, chairman of the Foreign Affairs Committee, was greeted with wild applause when he declared that American rights should be maintained, if necessary, by force of arms; so, too, was the Republican leader, Mr. Mann, when he announced his support of the bill.

Such was the congestion of business in the Senate, occasioned partly by the Republican filibuster, that debate did not begin till March 2, two days before the end of the session, Senator Stone, announcing his break with the Administration, yielded leadership to Hitchcock (Neb.), next ranking Democrat on the Foreign Relations Committee. He held that the passage of tne bill would lead to war and offered an amendment prohibiting armed merchantmen from transporting munitions to belligerent countries. On March 4 he spoke for four hours in favor of the amendment. In another quarter still more determined opposition developed. The Republican leaders, having delayed Senate business for several days and learned from the Democratic whips that there would probably be a special session early in the month, were now ready to end their filibuster. They desired to have action taken upon the Armed Ship bill. But the radical Republicans from the west could not be brought into line. Norris (Neb.) openly declared that he would kill the bill if he could. With him stood Clapp, Cummins, Gronna, Kenyon, La Follette, and Works. After a continuous debate of 12 hours, lasting all through the night of March 3, it became evident that a small group of Senators would talk the bill to death and defeat the will of an overwhelming majority. Under these circumstances 46 Democrats and 30 Republicans signed a manifesto in which they asserted that the bill would pass if a vote could be obtained, but that the rules allowing unlimited debate stood in the way. Of the 20 Senators who did not sign, eight had no opportunity to do so. The remaining 12 included the radical Republicans named above and five Democrats—Kirby, Lane, O'Gorman, Stone, and Vardaman. In the closing hours before adjournment on March 4 the debate was marked by angry colloquies and some disorder.

On the same day, in a public statement, the President described the situation as one "unparalleled in the history of the country, perhaps in the history of any modern government. In the immediate presence of a crisis fraught with more subtle and far-reaching possibilities of national danger than any other the government has known within the whole history of international relations, the Congress has been unable to act either to safeguard the country or to vindicate the elementary rights of its citizens. More than 500 of the 531 members of the two houses were ready and anxious to act; the House of Representatives had acted, by an overwhelming majority; but the Senate was unable to act because a little group of 11 Senators had determined that it should not." After reciting a long list of bills which, having passed the House, had failed to pass the Senate, he proceeded: "The explanation is incredible. The Senate of the United States is the only legislative body in the world which cannot act when its majority is ready for action. A little group of willful men, representing no opinion but their own, have rendered the great government of the United States helpless and contemptible. . . . The only remedy is that the rules of the Senate shall be so altered that it can act."

National Defense Appropriations.—The appropriations authorized by Congress aggregated $1,202,646,071. Six bills carrying a further amount of over $620,000,000 failed in the Senate because of congestion of business and defects in the rules of procedure; these were the Army, Military Academy, River and Harbor, Sundry Civil, General Deficiency, and Armed Ship bills. A great part of the appropriations related to the requirements of national defense. The naval bill alone called for an expenditure of $517,389,447. This bill, as passed by the House on Feb. 13 authorized the construction of three battleships, one battle-cruiser, three scout cruisers, 15 destroyers, 18 submarines, and other vessels; in time of war or national emergency it required shipbuilding yards and munition factories to give precedence to government orders and empowered the President to commandeer them and to draft their employees into the service of the government. The House also incorporated an amendment offered by the Republican leader, Mr. Mann, declaring it to be "the policy of the United States to adjust and settle its international disputes through mediation or arbitration to the end that war may be honorably avoided". The Senate, besides striking out the Mann amendment, made a number of modifications. It increased the number of midshipmen at Annapolis and, for a period of five years, reduced the length of the course; it provided for 50 additional submarines; and it created an emergency fund of $150,000,000 (to be covered by a bond issue) which should be applied partly to expediting naval construction and partly to building submarines. Over the bond issue a controversy arose with the House which refused to accept this feature of the bill since revenue legislation must originate in the House. It adopted and communicated to the Senate on March 2 a resolution declaring that its privileges had been infringed; but although the Senate immediately repassed the bill without the bond issue clause, the conferees agreed next day to restore it. The other Senate amendments were allowed to stand, except that the number of additional submarines was reduced from 50 to 20.

The Army Appropriation bill passed the House on Feb. 22, carrying over $247,000,000. An attempt to provide for universal military training was defeated on a point of order. This bill, reported to the Senate with an increase of $37,500,000, did not reach its final stages. The Military Affairs Committee of the Senate, after gathering information through the earlier part of the session, reported a Universal Service bill on Feb. 10. It provided for six months' training at the age of 19. On Feb. 23 Secretary Baker transmitted to the committee a bill drafted by the War College and looking towards a longer period of service; 11 months in the first year and two weeks in the second and third years. The Secretary was not prepared to say that the country needed so great an establishment or that the means suggested were the most appropriate.

The Emergency Revenue Bill.—In view of the extraordinary growth of naval and military outlays some revision of the fiscal system became imperative. Secretary McAdoo stated on Dec. 31, 1916, that under the existing revenue laws there would be a deficit of $279,000,000 for 1918 and that the Treasury would require another $100,000,000 as a working balance. He suggested raising substantially half the aggregate amount by new taxation and half by a bond issue. The Democratic members of the Committee on Ways and Means, conferring with him, drafted an emergency revenue bill early in January. It provided for an increase of 50 per cent. in inheritance taxes (expected to yield $22,000,000); an eight per cent. tax on the net profits of corporations and joint-stock companies in excess of $5,000 and of an amount equal to an eight per cent. return on invested capital (expected to yield $226,000,000); the sale of Panama Canal bonds to the value of $222,000,000 and of long-term bonds to the value of $81,418,000; and it authorized the Secretary of the Treasury to issue $300,000,000 in certificates of indebtedness to meet temporary deficiencies. The Democratic caucus gave its approval on Jan. 26, the vote being 122 to 13. A number of dissidents, including Page (N. C.), Bailey (Pa.), Callaway (Tex.), Quin (Miss.), and Sherwood (O.), made a vigorous attack upon the bill and reserved the right to oppose it in the House; but they did not persist in their first intention of asking the caucus to instruct the military and naval committees to reduce appropriations. Mr. Kitchin, chairman of the Ways and Means Committee, strove to reassure opponents of the bill by observing that the taxes would fall on those "who have been clamoring for preparedness" and for the most part north of the Mason and Dixon line. "You have been crying for preparedness", he said on Jan. 30, addressing the House Republicans. "The excess profits tax will be paid in large part by those who were loud clamorists for preparedness, who, in every shape, fashion, and form, demanded of their representatives these immensely increased appropriations." A spirit of sectionalism showed itself in the debates. Republicans asserted that the Democrats were using the preparedness issue to lay unjust burdens upon the wealthier communities of the North. Gardner (Mass.) went so far as to threaten that the representation of the South would be reduced in conformity with the Fourteenth Amendment. The House, having made no changes in the bill, passed it on Feb. 1 by a vote of 211 to 196. The Republicans, presenting a solid front in opposition, were joined by one Socialist, London (N. Y.), and by four Democrats, Page and Doughton (N. C.), Callaway (Tex.), and Caldwell (N. Y.).

The Democratic caucus of the Senate made only one important change in the bill—the Underwood amendment reducing the tax on oleomargarine from 10 cents a pound to two. But when the revised Treasury estimates, submitted early in February, indicated a deficit of $333,400,000 for 1918, the Finance Committee recommended an increase of the bond issue and other changes. Ultimately the Democratic leaders found it necessary to drop all amendments; for the Republican filibuster which began on Feb. 23 entailed a delay of some days, and so near the end of the session any further delay might prove fatal. On Feb. 28 the Senate passed the bill, exactly as it came from the House, by a strict party vote of 47 to 33.

"Pork" Bills.—Notwithstanding the congestion of business in Congress and the obvious need of rigid economy, the so-called pork bills made their appearance as usual. On Jan. 19 the House passed the omnibus Public Buildings bill by a vote of 234 to 92. This bill carried more than $38,000,000, distributed among 400 items. In the debates, which lasted four days, a determined opposition developed; in the case of 308 post offices it was shown that the new buildings would cost a million and a half to maintain as against a quarter of a million now paid in rental. Fortunately no progress was made in the Senate. On Jan. 26 the House passed, by a vote of 221 to 132, the River and Harbor bill, carrying over $38,155,000. The Senate Commerce Committee added $137,000 to this amount; but in a minority report five Republican members of the Committee condemned the bill as wasteful and advocated the appropriation of only $25,000,000, which should be spent at the discretion of the Secretary of War on such authorized projects as he believed of pressing importance. They also recommended that a permanent commission should be established to have general charge of waterway improvements. This bill also failed in the Senate, not through lack of support, but through lack of time for its consideration. The Senate did pass, however, a Flood Control bill which had passed the House in the previous session (*A. Y. B.*, 1916, p. 557); and this was done notwithstanding the attacks made upon it as a pork measure. Senator Kenyon declared that it would reclaim 18,000,000 acres of land mainly held by speculators.

Prohibition.—The spread of sentiment in favor of prohibition found expression in several important measures: (1) Giving effect to a local popular vote held in November, Congress made Alaska "bone dry." (2) It established prohibition in Porto Rico subject to popular approval in a referendum vote. (3) The sale of alcoholic liquors, as well as their importation or manufacture for sale, was forbidden in the District of Columbia, only importation for personal use being permitted. The bill passed the Senate on Jan. 9 by a vote of 55 to 32 and the House on Feb. 28 by a vote of 273 to 137; party lines were completely ignored. Senator Underwood sought to incorporate in the bill a clause allowing the people of the District to accept or reject it in a referendum vote. The Senate first modified his amendment so as to permit women to take part in the referendum and then rejected it by a tie vote. In the House a referendum motion was beaten decisively. (4) In the Senate, on Feb. 15, a rider was attached to the Post Office Appropriation bill. This provided: first, that liquor advertisements should not be carried in the mails to states which had enacted laws against such advertisements; and, second, that liquors should not be shipped into states which had forbidden their manufacture and sale for beverage purposes, this provision applying even in cases where the state law permitted importation for personal use. The rider carried in the Senate by a vote of 55 to 11 and in the House by 319 to 72. (5) In both Houses a constitutional amendment providing for national prohibition was reported from the Committee; but no action was taken upon it.

Porto Rico and the Danish West Indies.—On Feb. 20, responding to the urgency of the President, the Senate at last passed the Porto Rico Citizenship bill which had passed the House in the preceding session. This bill admits residents of Porto Rico collectively to American citizenship, establishes universal male suffrage, and imposes prohibition on the island, unless, in a referendum vote, the islanders reject it. Late in February both houses passed a bill which appropriated $25,000,000 to carry out the treaty provisions for the purchase of the Danish West Indies and fixed the form of government. Under the terms of this bill the President is authorized to appoint a governor, who may be a military or naval officer, and other officials, who shall be natives of the islands. The local courts are left in their present form. So far as compatible with changed sovereignty all taxes and customs duties now levied shall remain in effect until Congress enacts appropriate legislation; but an export tax of eight dollars a ton is laid upon sugar, this tax, along with import duties, being expected to defray the cost of government. While the United States will, as a general rule, treat imports from the islands exactly like imports from foreign countries, no duties will be imposed upon products and manufactures which do not contain foreign materials to a higher value than 20 per cent. of their total customs value. Sugar, the chief product of the islands, will for this reason escape the American import duty of $20 a ton.

THE SIXTY-FIFTH CONGRESS—SPECIAL SESSION OF THE SENATE

Closure Rule Adopted.—The Senate met in special session on March 5. The President convened it for three main reasons: first, because it had failed, in the preceding session, to ratify the treaty with Colombia; second, because more than 1,400 nominations awaited confirmation, the controversy over the advancement of Dr. Cary T. Grayson to the rank of Rear-Admiral having delayed action upon these; and third, because the President had urged, after the failure of the Armed Ship bill (see *supra*), the necessity of adopting some form of the closure. In amending the rules of procedure the parties acted in harmony. A committee of 10 (half from each party) drew up an amendment which provided that on petition of 16 Senators supported two days later by a two-thirds vote debate on a pending measure should be brought to a close, each Senator being limited thereafter to one hour's speech and no amendments being permitted except by unanimous consent. The Senate adopted this new rule on March 8 by a vote of 76 to three, the three being Gronna and La Follette, who had opposed the Armed Ship bill, and Sherman, who had favored it. The Senate, after confirming the numerous nominations, proceeded to debate the treaty with Colombia; but on March 16, when it became obvious that no agreement could be reached, the special session was brought to an end. The Senate, as modified by the election of 1917, included 51 Democrats and 43 Republicans. (See IV, *The National Administration.*)

The War Congress: The Sixty-fifth Congress, Special Session.—The Sixty-fourth Congress had come to the end of its term without any definite understanding that a special session of the new Congress would be called; for while the Democratic whips had indicated the probability of a session beginning on March 6, the President was reported in the papers as having no intention of calling one. The very serious aspect of foreign affairs, however, and the necessity of securing action upon certain bills (especially the Army Appropriation bill) which the Senate had not passed, led the President to summon Congress to meet on April 16. On March 21 a new proclamation fixed the date two weeks earlier, public interests requiring the assembly of Congress on that day "to receive a communication concerning grave matters of national policy which should be immediately taken under consideration".

Great interest was manifested in the organization of the House of Representatives because of the almost equal strength of the two parties. The decision seemed to rest in the hands of six "independents"—Fuller (Mass.), Kelly (Pa.), London (Socialist, N. Y.), Martin (La.), Randall (Cal.), and Schall (Minn.). Five of these swung to the support of Champ Clark, giving him the Speakership by 217 votes against 205 for James R. Mann. The Republican forces were weakened at the moment by the resignation of one member, the absence of four others, and a secessionist movement (by way of protest against Mann's leadership) which gave Gillett and Lenroot each two votes. The Democrats were thus enabled to dispense all the capitol patronage (some 490 places) and to appoint the chairmen of 59 committees. In spite of the protests of Gallivan (Mass.) most of the chairmanships went to Southern members. It might be noted that on Sept. 24 the House created a new committee on Woman Suffrage by a vote of 181 to 107, this step having the express approval of President Wilson. For the first time a woman took her seat in the House—Miss Jeanette Rankin (Mont.).

When this first War Congress adjourned on Oct. 6, after sitting for six months, it had accomplished a remarkable legislative task. First came the declaration of a state of war with Germany, adopted with little delay and, in view of the pacifist sentiment displayed earlier, with little opposition. Most of those who did vote in the negative fell into line as soon as the step had been taken. Congress proceeded at once to authorize a series of war undertakings on a scale of vast magnitude. It established a new national army of a million men to be raised, not on the old voluntary plan, but by conscription. It appropriated nearly nineteen and a half billion mainly for the purposes of the war—$640,000,000 for the aviation service alone. In the Espionage act and the Food Control act it entrusted the government with broad powers over persons and property. President Wilson said: "The Sixty-fifth Congress, now adjourning, deserves the gratitude and appreciation of the people whose will and purpose I believe it has faithfully expressed. One cannot examine the record of its action without being impressed by its completeness, its courage, and its full comprehension of a great task. . . . It seems to me that the work of this remarkable session has not only been done thoroughly but that it has also been done with the utmost despatch possible in the circumstances or consistent with a full consideration of the exceedingly critical matters dealt with."

Nothing about the session impressed the public more than the confidence which, in a great emergency, was placed in the President. He did not get everything he asked; a press censorship was refused. There were minority protests and delays due to cumbersome legislative machinery. But on the whole executive ascendancy has never been so marked. Many Congressmen agreed with Gardner (Mass.) when he declared: "What the President says he needs that shall I vote to give him"; and the Democratic House caucus, on April 19, decided to consider only bills recommended by the President. After Speaker Clark had asserted that a conscription bill could never pass the House of Representatives, the President, persisting in his course, secured an overwhelming triumph. He successfully insisted upon a single head for the food administration. Perhaps no case was more significant than his persuasion of Congress to abandon the idea of erecting a joint committee to supervise executive expenditures on the war.

While the members of Congress stood well together in a determination to prosecute the war with vigor, a very small minority resorted to tactics which suggested pro-German sympathies. This was particularly the case with Senator La Follette, whose constant criticism of war policies and whose utterances within and without Congress brought charges of disloyalty and demands that he be expelled from the Senate. In the House Mr. Heflin (Ala.) created a sensation, late in September, when he said: "I could name 13 or 14 men in the two bodies who, in my judgment, have acted in a suspicious manner." This remark was made after the publication of von Bernstorff's note to Berlin asking authority to use $50,000 "to influence Congress".

The War Declaration.—On the evening of April 2 the President appeared before Congress and delivered his war message. He said:

> I advise that the Congress declare the recent course of the Imperial German Government to be in fact nothing less than war against the Government of the United States; that it formally accept the status of belligerent which has thus been thrust upon it; and that it take immediate steps not only to put the country in a more thorough state of defense, but also to exert all its power and employ all its resources to bring the Government of the German Empire to terms and end the war.

This would involve the utmost practicable coöperation with the governments now at war with Germany; the organization and mobilization of the material resources of the country to satisfy the war needs of the country; the immediate addition to the armed forces of the United States of at least 500,000 men chosen "upon the principle of universal liability to service"; and "the granting of adequate credits to the government, sustained, I hope, so far as they can equitably be sustained by the present generation, by a well conceived taxation."

In the course of his message the President declared that Germany in its new submarine policy had swept aside every restriction.

> The present German submarine warfare against commerce is a warfare against mankind. It is a war against all nations. . . . Neutrality is no longer feasible or desirable where the peace of the world is involved and the freedom of its peoples, and the menace to that peace and freedom lies in the existence of autocratic governments backed by organized force which is controlled wholly by their will, not by the will of their people. . . .
>
> We have no quarrel with the German people. We have no feeling toward them but one of sympathy and friendship. It was not upon their impulse that their Government acted in entering this war. It was not with their previous knowledge or approval. It was a war determined upon as wars used to be determined upon in the old, unhappy days, when peoples were nowhere consulted by their rulers and wars were provoked and waged in the interest of dynasties or of little groups of ambitious men who were accustomed to use their fellow men as pawns and tools. . . .
>
> The world must be made safe for democracy. Its peace must be planted upon the tested foundations of political liberty. We have no selfish ends to serve. We desire no conquest, no dominion. We seek no indemnities for ourselves, no material compensation for the sacrifices we shall freely make. We are but one of the champions of the rights of mankind. We shall be satisfied when those rights have been made as secure as the faith and the freedom of nations can make them.

Immediately after the message had been delivered a war resolution was introduced in both houses. As finally adopted its language ran:

> Whereas the Imperial German Government has committed repeated acts of war against the Government and the people of the United States of America: Therefore be it
> Resolved by the Senate and the House of Representatives of the United States of America in Congress assembled, that the state of war between the United States and the Imperial German Government which has thus been thrust upon the United States is hereby formally declared; and that the President be, and he is hereby, authorized and directed to employ the entire naval and military forces of the United States and the resources of the Government to carry on war against the Imperial German Government; and to bring the conflict to a successful termination all of the resources of the country are hereby pledged by the Congress of the United States.

When the resolution was reported in the Senate on April 3, La Follette, objecting to immediate consideration, forced it to go over till the next day. The debate, which began on the morning of April 4, with the understanding that it would continue without interruption till a vote could be had, was one of the bitterest that the Senate has known since the Civil War. Stone, chairman of the Committee on Foreign Relations, opposed the resolution. La Follette, in a three-hour speech, sought to place the blame for the existing situation upon Great Britain instead of Germany. This brought a scathing reply from Williams (Miss.). "I fully expected before he took his seat," said Senator Williams, "to hear him defend the invasion of Belgium. . . . I heard from him a speech which was pro-German, pretty nearly pro-Goth and pro-Vandal." Senator Norris, describing the war as "useless and senseless," denounced Wall Street and the newspapers for fostering war sentiment. The Resolution finally carried by a vote of 82 to six, the minority including three Democrats, Lane, Stone, and Vardaman, and three radical Republicans, Gronna, La Follette, and Norris.

In the House the debate began at ten in the morning, April 5, and lasted through the night. Kitchin, the Democratic floor leader, took a prominent part in opposing the resolution. McCulloch (O.) and Britten (Ill.) offered amendments which would have withdrawn from the executive the authority to send troops abroad; Sloan (Neb.) offered a substitute resolution empowering the President to place the country in a state of defense and directing him to enforce American rights. These proposals were rejected without a roll call. The resolution passed the House by a vote of 373 to 50, the minority coming almost entirely from the West and Middle West.

The War Army Act.—On April 5 Secretary Baker laid before Congress an army bill prepared by the General Staff and approved by the President. It provided that the regular army and the National Guard should be brought to full war strength, that the Guard should be called into Federal service, and that 500,000 men (with a second 500,000 when the President should deem it necessary) should be raised by selective draft: all told a force of over 1,727,000 men. The age of liability under the draft was fixed at 19 to 25, apportionment to be made among the states according to population.

From the first it was apparent that the principle of the draft would meet determined enemies in the House. While the Military Committee reported the bill on April 19, it did so with the provision that the President should resort to the draft only if he found that the military forces could not be raised or maintained by the voluntary system; it also fixed a different period of liability—21 to 40. Notwithstanding these changes Chairman Dent would not accept the bill; and it fell to Julius Kahn, ranking Republican member of the committee and a German by birth, to marshal support for the Administration. Kitchin, the majority leader, and Speaker Clark, although both voted for the bill at the end, condemned the draft, Clark, in the course of a long speech, declaring that "conscript" and "convict" meant the same thing to the people. Kahn's speech, on April 27, greatly impressed the House. Next day he carried an amendment eliminating the provision for volunteers (the vote was 313 to 109). Late at night the bill itself was passed by a vote of 397 to 24, a surprising result in view of the Speaker's assertion that a conscription bill could never pass the House. The minority included 14 Democrats, eight Republicans, one Socialist, and one Prohibitionist. Friends of Mr. Roosevelt, who wished to further his plan of organizing several divisions of volunteers for immediate service in France, tried to secure an amendment to the bill. It was rejected 170 to 106, not a few Democrats voting in the minority.

The Senate committee on Military Affairs endorsed the bill by a vote of 10 to seven. Chamberlain, the chairman, presented a report which was not of the usual perfunctory kind, but a measured, forceful appeal intended to affect the House and the country. During the debate criticism of the draft came mainly from those who were anxious to prosecute the war energetically, but who, in the light of Canadian and Australian experience, considered the voluntary system better. Several amendments were adopted. One made possible the Roosevelt volunteer expedition (adopted by a vote of 56 to 31). Another fixed the age of liability at 21 to 27. A third forbade the sale or gift of intoxicants to members of the military forces while in uniform and authorized the President to make regulations limiting or forbidding the sale of liquors at or near camps. The bill passed the Senate on April 28 by a vote of 81 to eight (five

Democrats and three radical Republicans).

It took nearly three weeks to adjust the differences between the two houses. In the final agreement certain minor changes were made in the original bill: these fixed the period of liability at 21 to 30 inclusive; doubled the pay of privates; limited the use of intoxicants by soldiers, as in the Senate amendment; and provided for the raising of four divisions of volunteers at the discretion of the President. When signing the bill, President Wilson intimated that he would not avail himself of the authority to raise volunteers.

The Espionage Act.—Among the war measures none aroused more controversy than the Espionage bill, an administration measure which, roughly speaking, combined the neutrality and press censorship bills of the previous Congress (see *supra, Congress and the Executive*). The censorship clause provided for the punishment of persons who, in violation of regulations prescribed by the President, published information relative to the public defense calculated to be of use to the enemy. It raised a storm of protest in the press and in the country. The House Judiciary Committee, eliminating certain objectionable features, reported a substitute clause. This met with no more favor than the original and was assailed by some of the most influential members of the House; by Speaker Clark, James R. Mann, the minority leader, and by Julius Kahn, who had led the fight for the selective draft. Clark declared that "the press censorship in the bill is in flat contradiction with the Constitution." On May 4 the House first struck out the clause (220 to 167) and then, late at night and just before final passage, adopted a substitute drawn by Gard (O.). This prohibited the publication, "wilfully and without proper authority," of information which, according to executive regulations, might be useful to the enemy; but it provided for jury trial, the jury to determine not only whether the publication was wilful, but also whether it would be useful to the enemy. Then the House adopted the whole bill, the vote being 260 to 105.

The Senate, after adopting on May 11 a more specific censorship clause than that written originally in the bill, decided next day to eliminate censorship altogether. Later attempts to have this action reconsidered failed by substantial majorities. The Senate also adopted a rider, proposed by Mr. Cummins, which prohibited the use of foodstuffs in the manufacture of alcoholic liquors; but on May 14, by a vote of 47 to 37, this clause was stricken out. Controversy also arose over a section of the bill which authorized the President to embargo exports when, in his opinion, the public safety and welfare so required—a provision designed to prevent the shipment of supplies to Germany through neutrals. This section was modified once, but restored when its necessity had been explained behind closed doors; and when La Follette sought to limit the embargo to goods needed in the United States and to forbid its use to coerce neutral nations to participate in the war, he found only eight supporters. On May 14 the bill passed the Senate by a vote of 77 to six (Borah, France, Gronna, La Follette, Sherman, and Vardaman).

On May 22, when the bill was in conference, the House Republicans met in caucus and decided to oppose the inclusion of any form of censorship in the bill. President Wilson then wrote to Chairman Webb of the House Judiciary Committee urging the imperative necessity of such legislation to deal with the few persons who could not be relied upon to observe "a patriotic silence about everything whose publication could be of injury." The administration had not abandoned its earlier position—"that authority to exercise censorship over the press to the extent that that censorship is embodied in the recent action of the House of Representatives is absolutely necessary to the public safety." Next day the President summoned the Senate conferees to the White House, where they informed him that the Senate could not be persuaded to accept the Gard clause of the House bill, but that they would endeavor to have some less drastic provision adopted. But on May 31, after the conferees had agreed on a very mild form of censorship, the House voted to recommit the bill and have censorship, even of this diluted sort, abandoned altogether. This finally settled the controversy.

The Espionage act covers a variety of subjects. Under the embargo provision the President may declare unlawful the shipment from the United States of any articles named in his proclamations. The Act forbids the disturbance of foreign relations by false statements, misrepresentation, and conspiracy to injure or destroy specific property situated in a country with which the United States is at peace; it deals with applications for passports, provides penalties for the enforcement of neutrality when the United States is a neutral nation, gives the President control over vessels in the territorial waters of the United States when an emergency exists, fixes severe penalties for any attempt to endanger the safety of a vessel or her cargo or persons on board, and gives the Postmaster General authority to exclude from the mails all matter deemed seditious, anarchistic, or treasonable.

Regulation of Foodstuffs.—From the beginning of the session the President urged upon Congress the enactment of laws which would conserve the food supply and increase production. Two Administration measures were passed—a Food Survey bill and a Food Control bill, both of which received the President's signature on Aug. 10. The first authorized the Secretary of Agriculture to investigate the basic facts relative to the production and distribution of foodstuffs, giving him power to compel persons to produce books and documents; to contract for the production of seeds and their sale to farmers at cost when, in any restricted area, a special need of seeds should exist; and to coöperate, for the purposes of the act, with state and local officials, public and private agencies. An appropriation of $11,346,000 was made.

The Food Control bill, which gave the government, acting through a food administrator, very extensive powers over the distribution of foodstuffs, had behind it the energetic support not only of the President, but of labor organizations throughout the country. In Congress it was opposed as too drastic, as conferring too extensive powers upon the central government, and as discriminating against the farmer. In the House, on June 21, Haugen (Ia.) offered an amendment under which shoes, clothes, and other necessaries (the things which the farmer consumed) would become subject to government regulation; but this was ruled out on a point of order. The House adopted one important amendment on June 23; this prohibited further manufacture of intoxicating liquors during the war and authorized the President to commandeer all stocks of distilled spirits. An effort to soften the amendment by allowing the manufacture of light beers and wines to continue was defeated. On the same day the House passed the bill by a vote of 365 to five.

In the Senate the bill met more determined resistance. Senator Gore, Chairman of the Committee on Agriculture, instead of promoting the success of the bill which his Committee had favorably reported, took strong ground against it. He said:

> I want to see legislation that will stop gambling in food supplies, that will fix the heaviest penalty we can provide. I want those who make money gambling from the necessities, the calamities, of our fellow-men punished to the limit of the law. I favor legislation against hoarding and against fixing of extortionate prices.
>
> But I cannot support features of this bill that put the control of all the nation's food supply in the hands of one man. I maintain it is unconstitutional legislation. It would turn over the business of our country to one individual. One of the vital assets of the country in war time is its business, and nothing must be done to disturb it. What would be the use of our army, our navy, our air service, if we let the business of our country go to smash? Where would our country be after the war?

The main objections to the bill were that it violated the Constitution in confiscating farm products and that it interfered with legitimate business concerns in putting these products on the market. Gore, Reed, and others objected still more to placing so much power in the hands of a single administrator. On June 21 Senator Sherman, speaking for three hours, denounced the bill as "fool-ish, autocratic, confiscatory, unconstitutional, and idiotic. . . . I am constrained to say there are more fool ideas wrapped up in this food bill than have ever been put on paper before in any American Congress." He regarded it as a concession forced by the agitation of labor unions.

> Union labor controls this Administration. Now, I want to see how many men are going to be conscripted who wear the union collar. You'll find that no union men go over to France who don't want to go.
>
> This Senate and House will pass anything that any labor union indorses and endeavors to thrust upon them, right or wrong. Organized labor controls legislation in this Administration as it did in the last. It dictates to Senators, while the farmers are unorganized.

In the course of its passage through the Senate several important changes were made in the bill. Prohibition sentiment played a part in this. On July 7, after prolonged debate, the importation of distilled spirits and the use of foodstuffs in their manufacture was prohibited for the period of the war, the vote being 45 to 37; and afterwards, by a vote of 65 to 12, the Smoot amendment was adopted, under which the President was directed to commandeer all distilled spirits in bond, paying therefor cost of production plus 10 per cent. The Smoot amendment was afterwards much criticized; the impression gained ground that it would be held unconstitutional; and in view of the great dissatisfaction with other provisions of the bill, a general revision was made by a conference of leaders of both parties. The revised measure limited government control to foodstuffs, feed, and fuel; entrusted that control to a board of three members instead of a single administrator; fixed a minimum price for wheat in 1918; and dealt in a new way with the prohibition question. The importation and manufacture of distilled spirits was forbidden for the period of the war and the President empowered to limit or forbid the manufacture of beers and wines and, for certain war purposes, to commandeer stocks of whiskey in bond, paying a just compensation to be determined, in case of dispute, by the courts. This bill passed the Senate on July 31 by a vote of 81 to six, the minority including France, Hardwick, Penrose, Reed, Sherman, and Sutherland. But before final passage an amendment was carried (53 to 31) which set up a joint Congressional committee of 10 members invested with large powers to supervise executive war expenditures. This new provision President Wilson would not accept. On July 23 he wrote to Mr. Lever, chairman of the House Committee on Agriculture, intimating that, unless the conference committee dropped this objectionable feature, he would veto the bill. "I cannot believe," he said, "that those who proposed this section scrutinized it with care or analyzed the effects which its operation would necessarily have. The constant supervision of executive action which it contemplates would amount to nothing less than an assumption on the part of the legislative body of the work of the administration."

The conferees met on July 25. They dropped the provision for a committee on expenditures, restored the single food administrator in place of a board (President Wilson regarded this as indispensable), and accepted the Senate amendments regarding intoxicants and a minimum price for wheat. With regard to wheat the act recites that the President may, when he finds that an emergency exists and that assurance of a reasonable profit is necessary to stimulate production, fix a price not less than two dollars at the principal interior primary market. In addition to the matters already touched upon, the Act provides; that it is unlawful to attempt to enhance prices by destroying supplies, hoarding, monopolizing, or resorting to discrimination; that in case of hoarding the court may arrange for the sale and distribution of the products; that the President may purchase and sell wheat, flour, meal, beans, and potatoes; that he may requisition and operate any factory or plant in which necessaries (as defined by the Act) are produced; and that he may fix the prices of coal and coke, regulate distribution, and, in case of disobedience to his orders, operate the plants.

Paying for the War.—The first war

Congress, responding generously to the proposals of the administration, appropriated about $19,500,000,000, mainly for war purposes. The first and second War Appropriation acts, respectively of June 15 and Oct. 6, carried an aggregate of nearly eleven billion—this enormous sum being exclusive of the supply already granted to the navy for the fiscal year 1918 by the Sixty-fourth Congress (over $517,000,000) and to the army for 1918 by the Sixty-fifth Congress ($273,000,000). The first act carried three and a quarter billion. It also granted to the President certain powers in connection with the shipbuilding programme: the power to modify or cancel any contract for the building of ships or material; to requisition the output of any plant in which ships or materials are being made; to purchase or requisition any ship now being constructed or to be constructed; and, where orders are not complied with, to seize any ship, material, or plant for any use deemed necessary or expedient. The second act carried $7,657,000,000.

As to how these extraordinary outlays should be met, whether by taxation or loans, there was a sharp cleavage of opinion. The magnitude of the sum required, however, including loans of $7,000,000,000 to the Allies, made it obvious that a considerable part of the burden must be borne by future generations. Two bond issues were authorized, in April and September. On April 11 the first bond bill, an Administration measure, was reported to the House. It passed three days later without a dissenting voice; there would not have been even the formality of a roll call had not certain members who had opposed the war resolution insisted on the opportunity of showing their support of the war. Nor was there any opposition in the Senate. This law authorized the issue of long-term bonds to the value of $5,000,000,000, exempt from taxation, the terms and conditions of the issue to be fixed by the Secretary of the Treasury under the limitation that the rate of interest should not exceed three and a half per cent. It also authorized the issue of $2,000,000,000 in one-year certificates of indebtedness to keep the Treasury in funds until new revenue should come in. Of the five billion two were to be applied to expenditures for national defense and three were to be loaned to the governments at war with the enemies of the United States, securities of these governments being purchased which should bear the same rate of interest and be subject to the same terms and conditions as the American bonds. It was also provided that if a subsequent issue of bonds (during the period of the war) should bear a higher rate of interest, that rate should also apply to the earlier issue and to the foreign bonds taken in exchange. The second bond issue, which passed through both houses without dissent, aggregated over $11,000,000,000 and bore interest at four per cent. This included three billion to convert the three and a half per cent. issue authorized (as above) to cover loans to the Allies; four billion for new credits to the Allies; and two billion each of one-year certificates of indebtedness and five-year war-saving certificates at rates of interest to be fixed by the Secretary of the Treasury. These new issues were to be subject to income supertaxes imposed as a war measure and to the excess profits tax. During the debates several attempts were made unavailingly to incorporate in the bill provisions for a joint Congressional committee to supervise war expenditures.

The War Revenue Act.—The vast expenditures on the war, even in the earliest stages, necessitated the finding of new sources of income in addition to bond issues. On May 9 a revenue bill, intended to raise over $1,800,000,000, was reported to the House. The main features of the bill were: heavy increases in the income tax, the excess profits tax, internal revenue taxes, and import duties (10 per cent. including articles on the free list). The bill also called for an increase of one cent in the rates for letters and postcards and increased charges for newspapers and magazines. The zone system of the parcel post was to apply to second-class mail matter, rates rising from two cents a pound to six. This burden laid upon the newspapers and magazines provoked loud protests from the publishers. Mr. Kitchin, chairman of the Committee of Ways and Means, accepted the challenge without hesitation:

> As I said in the committee, I say now to you members of the House, if we do not put this in (the higher second-class rates) it will not be a question of whether it is right or whether it is just or whether it is fair; it is simply a question of nerve and courage to do that which in your hearts and consciences you know is right. . . .
>
> It is claimed that these publications spread intelligence and educate the people, that it is necessary to send them through the mails, and they have permitted the newspapers and magazines to pay these low postage rates. Ah, they cannot put it upon any such hypocritical basis as that. If it is to educate the people, why is it they charge five to eight times as much to send a little Webster spelling book, or a dictionary, or a grammar or geography to the little school children throughout the United States? Is not that for the spread of intelligence? No; it is not for the spread of intelligence; the people do not need magazines and newspapers half as badly as shoes and flour and meat. We do not pay nine-tenths of the charges for the transportation on flour, meat, shoes and clothing.

In explaining and justifying the bill Mr. Kitchin used a phrase which was occasionally quoted against him afterwards. He said that he would shut his eyes and vote for the bill. It "does not suit me in every particular," he confessed.

> I did not want some things in it, and I wanted some things in it that are out of it. But it is the resultant product of our best wisdom, investigation, and judgment, and of the best patriotism of our committee.
>
> It is not a time for a man to say that this bill taxes industry in my district, or my State; it is not a time to say that these taxes will destroy that industry. It is not a time for the American patriot to think of self. His first and only thought should be, "How can I best serve my country in this hour of war?"
>
> A million, and perhaps more, of the best young men of this country will sooner or later face the enemy's guns, and no man who has to pay a dollar of these taxes who remains at home while the boys are at the front should protest and complain and denounce this bill. His not to reason why; he ought to be willing, as the young men of this country are willing, to sacrifice all profit, all business, all career, and offer up their lives. It does not lie in the mouth of any American patriot to say, "I will refuse to pay my dollar or sacrifice any part of my profit." We should be able to say, "Take all my profits if necessary to sustain my country in this war."

The bill passed the House on May 23 by a vote of 329 to 76 without any notable changes having been made in the original text.

For four or five weeks the Senate Committee on Finance labored with the House bill and made some striking changes. It swept away the tariff increases, substituting consumption taxes on sugar, coffee, tea, and cocoa; it substituted for the zone system as applied to second-class matter a five per cent. tax on the profits of publishers; it transformed the excess profits tax by determining normal profits on the basis of the earnings in the three years before the war and by adopting a graduated tax instead of the straight eight per cent. tax of the House bill; it did away with the increase in inheritance taxes and the retroactive tax on 1916 incomes which the House had approved; and it imposed a prohibitive tax to prevent the manufacture of distilled spirits, at the same time virtually doubling the tax on other intoxicants. Late in July, however, Secretary McAdoo presented revised estimates of the government's war needs; for the ensuing year it would require nearly ten billion exclusive of loans to the Allies, he predicted. The Committee therefore revised its bill and mainly by increasing the levies upon incomes and intoxicants brought the estimated yield above two billion.

In explaining his measure to the Senate, Mr. Simmons, chairman of the Committee, explained that nearly $1,400,000,000 would be obtained from incomes and war profits alone; more than $200,000,000 from intoxicants. The Committee, he said, had been profoundly impressed with the necessity of "broadening and developing our system of special taxation so as to present a scientific scheme, logically constructed," and "to provide a superstructure sufficiently strong and flexible to meet not only our present but our future needs." The ranking Republican member of the committee, Senator Penrose, announced his support of the bill and argued for its prompt passage. He called it the greatest bill ever prepared by an American Congress; for although he favored the tariff as the general basis of revenue, he believed direct taxes to be justified in war time.

The opponents of the bill were mainly radical Republicans who employed the phrase "conscription of wealth" and wished, by means of the income tax and the war profits tax, to make the country pay its way in war time with less reliance on loans. Johnson of California proposed an 80 per cent. tax on war profits which would yield three or four billion instead of a billion and a quarter as in the bill. This was rejected by a vote of 62 to 17. La Follette, after a long speech, made various proposals which were voted down by similar majorities. The bill passed the Senate on Sept. 10 by a vote of 69 to four (Borah, Gronna, La Follette, Norris); but before this it had been decided to drop the tax on publishers, the consumption taxes, and all remaining increases in second-class rates.

The conference committee took three weeks to reach a settlement. Although its work was done in secrecy (because Mr. Kitchin wished to keep lobbyists away from the conferees), the newspapers published day by day the conclusions which were reached; and this situation continued even after new precautions had been taken to keep the proceedings from the public. For the most part the views of the Senate prevailed; yet Mr. Kitchin, who had denounced the Senate bill as "a rich man's measure," now expressed satisfaction. "The burden is shifted around equitably between the rich and the poor," he said, "and while everyone has to pay, none has to pay unfairly, I think." The War Revenue act as finally adopted provided, among other things, for changes in the income tax, with a lowering of the exemption and an increase of the rate, an excess profits tax of 20 to 60 per cent., normal earnings being based on the average for three years before the war, increased taxes on intoxicants and on tobacco and manufacturers of tobacco, taxes on transportation, amusements, automobiles, etc., stamp taxes on bonds, deeds, parcel-post packages, etc., increased taxes on the transfer of estates, and an increase in postal rates. This last applies not only to first-class matter, but also to second-class matter; in the latter case the weight falls chiefly on advertisements.

Other Legislation.—In addition to the measures already cited, Congress dealt with a number of important subjects. The Aviation act of July 24 appropriated $640,000,000 and left the Executive free as to the details of expenditure. An act of Oct. 1 created an aircraft board of nine members for the purpose of coördinating and expanding industrial activities relating to airplanes and facilitating generally the development of the air service. The Military and Naval Insurance act of Oct. 6, making an appropriation of $176,250,000, provided for (1) governmental family allowances of pay and compulsory allotment of pay for the support of dependents; (2) compensation for death or disability due to injury or disease resulting from service; and (3) ability to get additional insurance at low cost. The Trading with the Enemy act of Oct. 6 (1) forbids commercial intercourse with an enemy or an ally of an enemy; (2) authorizes the President to provide a censorship of messages between the United States and any foreign country; and (3) authorizes him to place an embargo on imports from any foreign country. The Interstate Commerce Commission was enlarged by the addition of two members and subdivisions were empowered to act with full authority so as to attain proper despatch of business. The River and Harbor bill which failed in the last Congress became law on Aug. 8. It carried, however, only $27,826,150. When this measure was brought up in the House Democratic caucus, favorable action was refused because such extravagance at a particularly critical time was felt to be politically dangerous.

THE SIXTY-FIFTH CONGRESS, SECOND SESSION

The regular session of the Sixty-fifth Congress opened on Dec. 3. President Wilson appeared before the two Houses on the following day and recommended that Congress immediately declare the United States in a state of war with Austro-Hungary. In the course of the address, which was intended for the world at large as well as Congress, the President defined the thing against which the Allies are contending as the "menace of combined intrigue and force."

> This intolerable Thing of which the masters of Germany have shown us the ugly face, this menace of combined intrigue and force, which we now see so clearly as the German power, a Thing without conscience or honor or capacity for covenanted peace, must be crushed, and if it be not utterly brought to an end, at least shut out from the friendly intercourse of the nations; and, second, that when this Thing and its power are indeed defeated and the time comes that we can discuss peace—when the German people have spokesmen whose word we can believe, and when those spokesmen are ready in the name of their people to accept the common judgment of the nations as to what shall henceforth be the bases of law and of covenant for the life of the world—we shall be willing and glad to pay the full price for peace and pay it ungrudgingly. We know what that price will be. It will be full, impartial justice—justice done at every point and to every nation that the final settlement must affect, our enemies as well as our friends.

The President left, however, no room for doubt that the United States would press forward to decisive victory. In fact the theme he followed might well be defined as "peace with victory."

> Let it be said again that autocracy must first be shown the utter futility of its claims to power or leadership in the modern world. It is impossible to apply any standard of justice so long as such forces are unchecked and undefeated as the present masters of Germany command. Not until that has been done can right be set up as arbiter and peacemaker among the nations. But when that has been done—as, God willing, it assuredly will be—we shall at last be free to do an unprecedented thing, and this is the time to avow our purpose to do it. We shall be free to base peace on generosity and justice, to the exclusion of all selfish claims to advantage even on the part of the victors.
>
> Let there be no misunderstanding. Our present and immediate task is to win the war, and nothing shall turn us aside from it until it is accomplished. Every power and resource we possess, whether of men, of money, or of materials, is being devoted and will continue to be devoted to that purpose until it is achieved. Those who desire to bring peace about before that purpose is achieved, I counsel to carry their advice elsewhere. We will not entertain it.
>
> We shall regard the war only as won when the German people say to us, through properly accredited representatives, that they are ready to agree to a settlement based upon justice and the reparation of the wrongs their rulers have done. They have done a wrong to Belgium, which must be repaired. They have established a power over other lands and peoples than their own—over the great empire of Austria-Hungary, over hitherto free Balkan States, over Turkey, and within Asia—which must be relinquished.

If the German people continued after the war to accept the Government of their present masters, the President said, "it might be impossible to admit them to the partnership of nations which must henceforth guarantee the world's peace," and "it might be impossible also to admit Germany to the free economic intercourse which must inevitably spring out of the other partnerships of a real peace."

On Dec. 7 a war resolution, based on the President's recommendation, passed both houses with only one dissentient voice. Representative London (Socialist, N. Y.) alone opposed it and, when charged with lack of patriotism, explained that his socialistic creed made this attitude necessary.

From the opening of the session it became evident that Congress would be chiefly engrossed with war business. The annual estimates called for appropriations of over 13½ billion; and Mr. McAdoo informed Congress that for the year 1918 it would still be necessary to find over five billion to meet an impending deficit.

On Dec. 12 the Senate Committee on Military Affairs began an investigation of alleged shortcomings in the War Department. This, as well as an investigation of the disturbances in the Shipping Board, promised to reveal some of the difficulties which the great expansion of government activity has had to meet.

On Dec. 17 the House adopted a resolution calling for national prohibition by constitutional amendment. Next day the Senate concurred in the language of the House resolution, which differed slightly from the resolution originally adopted in the Senate.

THE NATION'S WAR POLICY

Through the President's State Papers

Robert L. Schuyler

In a series of historic documents, President Wilson set forth the policies of his administration and sought to interpret the purpose and spirit of America in the crisis precipitated by the German Government and in the war which followed. It is safe to say that no other collection of presidential utterances has aroused such intense interest either at home or abroad. The most notable of these documents were the following: address to the Senate (Jan. 22, 1917); address, announcing the severance of diplomatic relations with the German Empire (Feb. 3, 1917); the "Armed Neutrality" message (Feb. 26, 1917); address to Congress, recommending the acceptance of the state of war thrust upon the country by the German Government (the War Message, April 2, 1917); Address to the country (April 16, 1917); Reply to the Pope (Aug. 27, 1917); Annual Address to Congress (Dec. 4, 1917). The principal problems of our foreign policy with which they deal are also the great international questions of the day.

Armed Neutrality.—In announcing the diplomatic break with Germany, the President refused "to believe that it is the intention of the German authorities to do in fact what they have warned us they will feel at liberty to do," but announced that "if American ships and American lives should in fact be sacrificed by their naval commanders, in heedless contravention of the just and reasonable understandings of international law, and the obvious dictates of humanity," he should "take the liberty of coming again before the Congress to ask that authority be given . . . to use any means that may be necessary for the protection of our seamen and our people in the prosecution of their peaceful and legitimate errands on the high seas." He declared emphatically that the United States was not seeking war, and would be driven to it only as a last resort in defense of the rights of its people.

During the month of February, a number of merchant vessels were sunk, and American property and lives were destroyed, in accordance with the policy of unrestricted submarine warfare adopted by the German government in January. American merchant shipping was tied up in port, and the sailings of the American liners were canceled. Therefore, on Feb. 26 the President again went before Congress, and asked for authority to arm American merchant ships for defense, "and to employ any other instrumentalities or methods that may be necessary and adequate to protect our ships and our people in their legitimate and peaceful pursuits on the seas." What he had in mind was a resort to armed neutrality, for which he said there was "abundant American precedent." The filibuster in the Senate which took place toward the close of the session of Congress prevented the enactment of the Armed Ship bill, and the President proceeded on his own authority to supply American merchant ships with defensive armaments and naval crews. The experiment in armed neutrality, however, was short-lived, and was soon pronounced by the President to be "impracticable."

In his War Message of April 2, he laid it down that "neutrality is no longer feasible or desirable, where the peace of the world is involved and the freedom of its peoples. . . . We have seen the last of neutrality in such circumstances. We are at the beginning of an age in which it will be insisted that the same standards of conduct and of responsibility for wrongdoing shall be observed among nations and their governments that are observed among the individual citizens of civilized states."

German Violations of International Law.—The year 1916 closed with much uncertainty respecting the President's attitude towards the European belligerents. His note of Dec. 18, proposing a statement by them of the terms on which they would be prepared to make peace, had been interpreted in some quarters as indicating that he saw nothing to choose between the cause of the Entente Allies and that of the Central Powers. The expression "Peace without Victory," used in his address to the Senate of Jan. 22, had also been construed in the same sense.

The War Message of April 2, however, contained a bitter arraignment of the lawless acts of the German Government. The President spoke of the submarine warfare, even when certain restraints had been observed by the German submarine commanders, as a "cruel and unmanly business"; and under the new policy of unrestrained warfare, vessels of every kind, whatever their character, their cargo or their errand, were "ruthlessly sent to the bottom without warning and without thought of help or mercy for those on board, the vessels of friendly neutrals along with those of belligerents." He pointed out that international law originated in an attempt to set up some law which would be respected at sea, and he pronounced the war which the German government was waging to be "a war against all nations." It was the object of the United States to "vindicate the principles of peace and justice in the life of the world as against selfish and autocratic power, and to set up amongst the really free and self-governed peoples of the world, such a concert of purpose and of action as will henceforth insure the observance of those principles." The President furthermore dwelt upon the hostile purpose of the "Prussian autocracy," as manifested in its intrigues against the government of the United States both at home and abroad.

The German People and the German Government.—Ever since the beginning of the war, the President has consistently distinguished between the Imperial German Government and the German people. In his War Message he insisted that the United States had no quarrel with the German people. "We have no feeling toward them but one of sympathy and friendship. It is not upon their impulse that their Government acted in entering this war. It was not with their previous knowledge or approval. It was a war determined upon as wars used to be determined upon in the old, unhappy days, when peoples were nowhere consulted by their rulers, and wars were provoked and waged in the interest of dynasties or of little groups of ambitious men, who were accustomed to use their fellow-men as pawns and tools." He urged considerate treatment of the millions of men and women of German birth in the United States. In his reply to the Pope, Aug. 27, 1917, the President repeated that the enemy of the United States was not the German people, but "the ruthless master of the German people." The American people did not desire reprisal upon the German people for the wrongs suffered at the hands of the German Government.

In declining to accede to the Pope's proposal, which involved treating with the present German Government, he replied: "We cannot take the word of the present rulers of Germany as a guarantee of anything that is to endure, unless explicitly supported by such conclusive evidence of the will and purpose of the German people themselves as the other peoples of the world would be justified in accepting. . . . We must await some new evidence of the purposes of the great peoples of the Central Powers."

In the annual message to Congress of Dec. 4, 1917, he took the position that the German power must be crushed, "and if it be not utterly brought to an end, at least shut out from the friendly intercourse of the nations"; but that humanity demanded that "no nation or people shall be robbed or punished because the irresponsible rulers of a single country have themselves done deep and abominable wrong." He even went so far as to say that the peace to be made must not only deliver Belgium and Northern France from the Prussian menace, but must also free the peoples of Austria-Hungary, the Balkans and Turkey from the domination of the Prussian military and commercial autocracy. The future partnership which is to be the means of a guarantee of peace and justice in the world must, he said, be a partnership of peoples, not a mere partnership of governments.

Economic War After the War.—The President has taken strong ground against commercial boycotts to follow the war, such as have been contemplated and threatened by both groups of European belligerents. "Responsible statesmen," he said in the reply to the Pope, "must now everywhere see, if they never saw before, that no peace can rest securely upon political or economic restrictions meant to benefit some nations and cripple or embarrass others, upon vindictive action of any sort, or any kind of revenge or deliberate injury"; he added that the American people desired the participation of all nations in the economic opportunities of the world. One of his objections to the plan of peace proposed by the Pope, implying as that did the continuance of the present system of government in Germany, was that it would involve the creation of "a permanent hostile combination of nations against the German people." The United States, he said, was opposed to the establishment of selfish and exclusive economic leagues, which in the long run were worse than futile, "no proper basis for a peace of any kind, least of all for an enduring peace." In the message to Congress of Dec. 4th, he warned the German people that if they continued to submit to "ambitious and intriguing masters, interested to disturb the peace of the world," it might be impossible to admit them to free economic intercourse with other nations; but if such situation arose, he said, it would inevitably, sooner or later, remedy itself "by processes which would assuredly set in."

Guarantees of Peace.—The President has shown that his main concern is to prevent the recurrence in the future of international wars. In the address to the Senate of Jan. 22, he used this language:

> In every discussion of the peace that must end this war, it is taken for granted that that peace must be followed by some definite concert of power which will make it virtually impossible that any such catastrophe should ever overwhelm us. Every lover of mankind, every sane and thoughtful man, must take that for granted.

In the same document, the President said:

> The treaties and agreements which bring it (the war) to an end, must embody terms which will create a peace that is worth guaranteeing and preserving, a peace that will win the approval of mankind, not merely a peace that will serve the several interests and immediate aims of the nations engaged. We shall have no voice in determining what those terms shall be, but we shall, I feel sure, have a voice in determining whether they shall be made lasting or not by the guarantees of a universal covenant. . . . No covenant of coöperative peace that does not include the peoples of the New World can suffice to keep the future safe against war.

There must, he held, be not only a balance of power, but a "community of power." A concert of power, he insisted, was not opposed to the traditional foreign policy of the United States, for it was not an "entangling alliance." Thus, even before the entrance of the United States into the war, the President had definitely taken the position that no guarantee of lasting peace could succeed to which the United States was not a party.

In the War Message of April 2 he said:

> A steadfast concert for peace can never be maintained except by a partnership of democratic nations. No autocratic government can be trusted to keep faith within it, or to observe its covenants. It must be a League of Honor, a partnership of opinion. . . . Only free peoples can hold their purpose and their honor steady to a common end, and prefer the interests of mankind to any narrow interest of their own.

Among the objects for which the United States was about to fight, he spoke of "a universal dominion of right, by such a concert of free peoples as shall bring peace and safety to all nations, and make the world itself at last free."

In his message to the Provisional Government of Russia, which preceded the visit of the American Commission to Russia, he again insisted that "the free peoples of the world must draw together in some common covenant, some genuine and practical coöperation that will in effect combine their force to secure peace and justice in the dealings of nations with one another. The brotherhood of mankind must no longer be a fair but empty phrase; it must be given a structure of force and reality." In the message to Congress of Dec. 4, he spoke again of that partnership of nations, "which must henceforth guarantee the world's peace."

Reduction of Armaments.—In the address to the Senate of Jan. 22, the President referred to the question of limiting military and naval armaments. He said:

> There can be no sense of safety and equality among the nations if great, preponderating armies are henceforth to continue here and there to be built up and maintained. The statesmen of the world must plan for peace, and nations must adjust and accommodate their policy to it as they have planned for war and made ready for pitiless contest and rivalry. The question of armaments, whether on land or on sea, is the most immediately and intensely practical question connected with the future fortunes of nations and of mankind.

Since the entry of the United States into the war, the question of the reduction of armaments has, of course, been held in abeyance.

National Equality and Self-Determination.—In the address to the Senate of Jan. 22, the President observed that "the right state of mind" and right feeling between nations was necessary for a lasting peace. This involved, he emphasized, the equality of nations, large and small. He explained that "equality" meant equality of rights; not, of course, equality of territory or of resources. "Only a peace between equals can last; only a peace the very principle of which is equality and a common participation in a common benefit." He urged recognition of the right of every nation to determine for itself the form of government under which it shall live, saying:

> No peace can last, or ought to last which does not recognize and accept the principle that Governments derive all their just powers from the consent of the governed, and that no right anywhere exists to hand peoples about from sovereignty to sovereignty as if they were property.

In his special message to the Provisional Government of Russia, he said:

> We are fighting for the liberty, the self-government, and the undictated development of all peoples, and every feature of the settlement that concludes this war must be conceived and executed for that purpose. . . . No people must be forced under sovereignty under which it does not wish to live. No territory must change hands, except for the purpose of securing for those who inhabit it a fair chance of life and liberty.

In the annual Message to Congress, he disclaimed any intention on the part of the United States of reorganizing the Austro-Hungarian Empire. "We only desire to see that their affairs are left in their own hands, in all matters, great or small."

Freedom of the Seas.—The subject of the freedom of the seas has naturally been emphasized in the President's notes and addresses since our participation in the war grew out of the violation of international law at sea by the German Government. In the War Message of April 2, the President clearly distinguished, in international morality at least, between breaches of international law which resulted in the destruction of property, and those which caused the loss of life. "Property," he said, "can be paid for; lives of peaceful and innocent people cannot be. The present German submarine warfare against commerce is a warfare against mankind." He has not departed from the position which he took in his address to the Senate of Jan. 22, that "the freedom of the seas is the *sine qua non* of peace, equality and coöperation. No doubt a somewhat radical reconsideration of many of the rules of international practice hitherto sought to be established may be necessary, in order to make the seas indeed free, and common in practically all circumstances for the use of mankind, but the motive for such changes is convincing and compelling. . . . It need not be difficult to define or to secure the freedom of the seas, if the governments of the world sincerely desire to come to an agreement concerning it."

Coöperation with the Entente Allies.—Though the President did not favor formal treaties of alliance between the United States and the Entente Allies, he took the position from the outset that war between the United States and Germany would involve, as he said in his War Message, "the utmost practicable coöperation in counsel and action with the governments now at war with Germany, and, as incident to that, the extension to those governments of the most liberal financial credits, in order that our resources may, so far as possible, be added to theirs."

In the address to the country of April 16, he called attention to the need of our supplying, "everything with which the people of England and France and Italy and Russia have usually supplied themselves but cannot now afford the men, the materials, or the machinery to make." Throughout the President has assumed that the closest coöperation between this country and the Entente Allies is essential to the successful prosecution of the war.

The Russian Revolution.—Like every other American, President Wilson welcomed the Russian Revolution of March, 1917. In the War Message he said:

> Does not every American feel that assurance has been added to our hope for the future peace of the world by the wonderful and heartening things that have been happening within the last few weeks in Russia? Russia was known by those who knew her best, to have been always in fact democratic at heart. . . . The autocracy that crowned the summit of her political structure, long as it had stood, and terrible as was the reality of its power, was not in fact Russian in origin, character or purpose; and now it has been shaken off, and the great, generous Russian people have been added, in all their native majesty and might, to the forces that are fighting for freedom in the world, for justice, and for peace. Here is a fit partner for a League of Honor.

Prior to the visit to Russia of the American Commission, headed by Elihu Root, President Wilson addressed a message to the Provisional Government of Russia, setting forth concisely the objects of the United States in entering the war, objects which had "been very much beclouded during the past few weeks by mistaken and misleading statements." In this he briefly restated the aims of the United States as he had previously interpreted them in his War Message.

In the annual message to Congress, Dec. 4, 1917, following the insurrection of the Bolsheviki of November, he deplored the fact that the Russian people had "been poisoned by the very same falsehoods that have kept the German people in the dark," and expressed the opinion that if the truth had been made clear to them, "the sympathy and enthusiasm of the Russian people might have been once for all enlisted on the side of the Allies, suspicion and distrust swept away, and a real and lasting union of purpose effected."

President Wilson's Peace Message.—On Tuesday, January 9, 1918, the President, having hastily called Congress in joint session to receive his message, presented to them a series of definite proposals upon which this country would consider terms of peace.

Briefly summarized, the President's proposals are as follows: (1) Open covenants of peace, with no private international understandings among nations. (2) Absolute freedom of the seas in peace or war, except when closed to enforce international covenants. (3) Removal of economic barriers to free trade among nations. (4) Adequate guarantees for the reduction of armaments to the lowest point consistent with domestic safety. (5) Adjustment of colonial claims in which the populations concerned may express their opinions on an equal basis with their suzerains, in the determination of titles. (6) The evacuation of Russia's territories, and freedom in determining her own political development. (7) Evacuation and restofation of Belgium. (8) Evacuation of all invaded French territory, and a settlement of the injustice of 1871 in respect to Alsace-Lorraine. (9) Readjustment of Italy's frontiers. (10) Autonomous freedom to be assured the peoples of Austria-Hungary. (11) Evacuation of Rumania, Servia, and Montenegro, an outlet to the sea for Servia, and a guarantee for Balkan political integrity. (12) An assured sovereignty for the Turkish portions of the Ottoman Empire, autonomous futures for other nationalities in the Empire, and free passage of the Dardanelles for all nations. (13) An independent Polish state erected from all Polish populations, with access to the sea. (14) A general association or league of nations to afford mutual guarantees of political independence and territorial integrity to both small and great nations.

In detail President Wilson's speech started with a reference to the Peace Conference then being held at Brest-Litovsk, by Russian representatives and the representatives of the Central Powers. He summarized the Russians as presenting

> Not only a perfectly definite statement of the principles upon which they would be willing to conclude peace, but also an equally definite programme for the concrete application of those principles.

In opposition to this the Central Powers were represented as having presented

> An outline of settlement which, if much less definite, seemed susceptible to liberal interpretation until their specific programme of practical terms was added. That programme proposed no concessions at all, either to the sovereignty of Russia or to the preferences of the population with whose fortunes it dealt, but meant, in a word, that the Central Empires were to keep every foot of territory their armed forces had occupied—every province, every city, every point of vantage—as a permanent addition to their territories and their power.

The sincerity of the Russian representatives made it impossible that such proposals of conquest and domination be entertained by them. The question naturally arises with whom the Russian representatives are dealing and for whom the representatives of the Central Powers are speaking. The President said:

> To whom have we been listening, then? To those who speak the spirit and intention of the resolutions of the German Reichstag of the 9th of July last, the spirit and intention of the liberal leaders and parties of Germany, or to those who resist and defy that spirit and intention and insist upon conquest and subjugation? Or are we listening, in fact, to both, unreconciled and in open and hopeless contradiction? These are very serious and pregnant questions. Upon the answer to them depends the peace of the world.

Concerning these proposals of the Central Powers, President Wilson stated that, "They have again attempted to acquaint the world with their objects in the war and have again challenged their adversaries to say what their objects are and what sort of settlement they would deem just and satisfactory." He quotes Mr. Lloyd George as expressing peace aims "with admirable candor and in admirable spirit for the people and government of Great Britain." Mr. Wilson stated that "no confusion of counsel existed among the adversaries of the Central Powers, no uncertainty of principle and no vagueness of detail. The only secrecy of counsel, the only lack of frankness, the only failure to make definite statement of the object of the war lies with Germany and her allies."

With regard to the spirit which should animate the final settlement and conclusion of the great war, Mr. Wilson said:

> The day of conquest and aggrandizement has gone by; so, also, is the day of secret covenants entered into in the interest of particular governments and likely at some unlooked for moment to upset the peace of the world. It is this happy fact now clear to the view of every public man whose thoughts do not still linger in an age that is dead and gone which makes it possible for every nation whose purposes are consistent with justice and the peace of the world to avow now or at any time the objects it has in view.

The President stated definitely America's position in the world war and her reasons for entering therein briefly as follows:

> We entered this war because violations of right had occurred which touched us to the quick and made the life of our own people impossible unless they were corrected and the world secured once for all against their recurrence. What we demand in this war, therefore, is nothing peculiar to ourselves. It is that the world be made fit and safe to live in; and particularly that it be made safe for every peace-loving nation which, like our own, wishes to live its own life, determine its own institutions, be assured of justice and fair dealings by the other peoples of the world, as against force and selfish aggression. All the peoples of the world are in effect partners in this interest and for our own part we see very clearly that unless justice be done to others it will not be done to us.
>
> The programme of the world's peace, therefore, is our programme, and that programme, the only possible programme, as we see it, is this:
>
> (1) Open covenants of peace, openly arrived at, after which there shall be no private international understandings of any kind, but diplomacy shall proceed always frankly and in the public view.
>
> (2) Absolute freedom of navigation upon the seas, outside territorial waters, alike in peace and in war, except as the seas may be closed in whole or in part by international action for the enforcement of international covenants.
>
> (3) The removal, so far as possible, of all economic barriers and the establishment of an equality of trade conditions among all the nations consenting to the peace and associating themselves for its maintenance.

(4) Adequate guarantees given and taken that national armaments will reduce to the lowest point consistent with domestic safety.

(5) Free, open-minded, and absolutely impartial adjustment of all colonial claims, based upon a strict observance of the principle that in determining all such questions of sovereignty the interests of the population concerned must have equal weight with the equitable claims of the Government whose title is to be determined.

(6) The evacuation of all Russian territory and such a settlement of all questions affecting Russia as will secure the best and freest coöperation of the other nations of the world in obtaining for her an unhampered and unembarrassed opportunity for the independent determination of her own political development and national policy, and assure her of a sincere welcome into the society of free nations under institutions of her own choosing; and, more than a welcome, assistance also of every kind that she may need and may herself desire. The treatment accorded Russia by her sister nations in the months to come will be the acid test of their good-will, of their comprehension of her needs as distinguished from their own interests, and of their intelligent and unselfish sympathy.

(7) Belgium, the whole world will agree, must be evacuated and restored, without any attempt to limit the sovereignty which she enjoys in common with all other free nations. No other single act will serve as this will serve to restore confidence among the nations in the laws which they have themselves set and determined for the government of their relations with one another. Without this healing act the whole structure and validity of international law is forever impaired.

(8) All French territory should be freed and the invaded portions restored, and the wrong done to France by Prussia in 1871 in the matter of Alsace-Lorraine, which has unsettled the peace of the world for nearly fifty years, should be righted, in order that peace may once more be made secure in the interest of all.

(9) A readjustment of the frontiers of Italy should be effected along clearly recognizable lines of nationality.

(10) The peoples of Austria-Hungary, whose place among the nations we wish to see safeguarded and assured, should be accorded the freest opportunity of autonomous development.

(11) Rumania, Serbia, and Montenegro should be evacuated; occupied territories restored; Serbia accorded free and secure access to the sea; and the relations of the several Balkan States to one another determined by friendly counsel along historically established lines of allegiance and nationality; and international guarantees of the political and economic independence and territorial integrity of the several Balkan States should be entered into.

(12) The Turkish portions of the present Ottoman Empire should be assured a secure sovereignty, but the other nationalities which are now under Turkish rule should be assured an undoubted security of life and an absolutely unmolested opportunity of autonomous development, and the Dardanelles should be permanently opened as a free passage to the ships and commerce of all nations under international guarantees.

(13) An independent Polish State should be erected which should include the territories inhabited by indisputably Polish populations, which should be assured a free and secure access to the sea, and whose political and economic independence and territorial integrity should be guaranteed by international covenant.

(14) A general association of nations must be formed under specific covenants for the purpose of affording mutual guarantees of political independence and territorial integrity to great and small States alike.

This has been the first definite series of proposals, concerning the basis on which peace will be made, to be enunciated by the United States. In comparison with Mr. Lloyd George's recent speech, the President was more definite in declaring that the wrong done France through the annexation of Alsace-Lorraine must be righted. He differed from Mr. Lloyd George with regard to the Russian situation in that he held out to the Russian people hopes of assistance for them from America, and tendered sympathy for the aims that those now in control of the country are seeking to achieve.

There has never yet been during the entire war such a definite statement of national aims and ambitions for peace made by either President Wilson or the leaders of any of the nations opposing German arms. Since the entrance of this country into the World War, the feeling has been that the first definite proposal of this kind would come from America; and America has not disappointed this wish.

In connection with President Wilson's speech the endorsement of his statement of peace aims by British labor has been timely and significant. Immediately after the receipt of his declaration in London, C. W. Bowerman, Arthur Henderson, and Henry J. May, representing the Parliamentary Committee of the Trade Union Congress, the National Executive Committee of the Labor Party, and the coöperative Parliamentary representation committee in the order named issued a statement supporting unreservedly Mr. Wilson's position and pledging the British Workman's Organization to continue the war in defense of the principles the President of the United States had laid down. Their statement commended particularly the moral energy and breadth of vision exhibited in the address to Congress as follows: "This is the only kind of diplomacy that the Democracies of the world can tolerate. Humanity has to pay dearly for secret covenants entered into by governments, and we rejoice that Mr. Wilson has so decisively proclaimed the Democratic doctrine of open diplomacy."

France received President Wilson's peace terms with undoubted sympathy and rejoicing, particularly on account of the definite manner in which he insisted upon a righting of the wrong done France in regard to Alsace-Lorraine. *Le Temps* says, "It is the first time the President of the United States has declared himself on the Alsace-Lorraine question. We had no doubt as to his sentiments, but we are profoundly glad that he has expressed them. We thank him also for placing the problem on its true ground in presenting the restitution of Alsace-Lorraine as a necessary condition for a general peace and not merely as a special claim of the French people." *La Liberté* makes the comment that "a new page has been added to the other noble and generous pages from the President's hand." In the United States the support given the President's speech was unanimous and emphatic. Ex-President Roosevelt said, "I am much pleased that the President states so emphatically that it is our duty to stand by our allies to the end and fight the war through to victory." The leading members of the Senate and the House of Representatives, Republican, Democratic and Socialists, have been unanimous in their approval of and enthusiasm for the President's speech. Senators Smoot, Sherman, Curtis; Representatives Gilett, Kitchin, Flood, Speaker Clarke and former Speaker Cannon all spoke of the message with hearty commendation, as did Representative London, a Socialist representative from New York City.

THE FUEL SITUATION

The Railway Traffic Situation.—In the last days of 1917 and the early part of 1918, the situation in the states east of the Mississippi, and particularly in those lying along the Atlantic seaboard, was extremely serious. Freight congestion had become so great on the railroads east of the Mississippi that the consequent tie-up of traffic was unprecedented in its magnitude. As a method of relieving this situation, President Wilson recommended that the operation of the railroads be taken over and that they be run for the period of the war under a supervision appointed by the Government. This plan met with the approval of Congress, and the President, acting under their authorization, appointed William G. McAdoo, Secretary of the Treasury, Director of Railroads.

The Coal Situation.—However, the congestion of freight continued, coupled with weather conditions of unprecedented severity, which made the demand and use for coal greater than it had ever been before. The Navy's coal supply was very short. With the freight of the nation unable to move to its destination, with the rivers of the country frozen in many instances, hampering greatly the transportation of fuel by barges and like methods, it was clear that eventually steps would have to be taken to relieve the danger threatened from an absolute inability of obtaining any coal supply by manufacturers as well as the owners of homes. Such a move, embracing the necessary measures for relieving the situation, would naturally emanate from H. A. Garfield, formerly President of Williams College, whom President Wilson had appointed Fuel Administrator. On the morning of Thursday, January 17, Director Garfield made the following statement as the substance of an order to be issued later by his office, concerning the shutting down of business during certain periods in order to relieve railroad congestion and to allow a sufficient supply of coal to be moved from the source of supply to the consuming centers. This order applies only to the states east of the Mississippi river, with the addition of Louisiana and Minnesota.

Dr. Garfield's First Statement.—The following preliminary order was issued:

Until further order of the United States Fuel Administrator, all persons selling fuel in whatever capacity shall give preference to orders for necessary requirements.

(A) Of railroads;

(B) Of domestic consumers, hospitals, charitable institutions and army and navy cantonments;

(C) Of public utilities, telephones, and telegraph plants;

(D) Of ships and vessels for bunker purposes;

(E) Of the United States for strictly governmental purposes, not including orders from or for factories or plants working on contracts for the United States;

(F) Of municipal, county, or State Governments for necessary public uses;

(G) Of manufactures of perishable food or of food for necessary immediate consumption.

The order further provides that on Jan. 18, 19, 20, 21, and 22, 1918, no fuel shall be delivered to any person, firm, association, or corporation for any uses or requirements not included in the foregoing list until the requirements included in the list shall have been first delivered.

On Jan. 18, 19, 20, 21, and 22, 1918, and also on each and every Monday beginning Jan. 28, 1918, and continuing up to and including March 25, 1918, no manufacturing plant shall burn fuel or use power derived from fuel for any purpose except—

(A) Such plants as from their nature must be continuously operated seven days each week to avoid serious injury to the plant itself or its contents.

(B) Manufacturers of perishable foods.

(C) Manufacturers of food not perishable and not in immediate demand, who may burn fuel to such extent as is authorized by the Fuel Administrator of the State in which such plant is located or by his representatives authorized therefor, upon application by the United States Fuel Administrator.

(D) Printers or publishers of daily papers may burn fuel as usual excepting on every Monday from Jan. 21 to March 25, 1918, inclusive, on which days they may burn fuel to such extent as is necessary to issue such editions as such papers customarily issue on important national legal holidays, and where such papers do not issue any editions on a holiday they are permitted to issue one edition on the said Mondays.

(E) Printing establishments which may burn fuel on Jan. 18, 19, 20, and 22 to such extent as is necessary to issue current numbers of magazines and other publications periodically issued.

On each Monday beginning Jan. 21. 1918, and continuing up and including Monday, March 25, 1918, no fuel shall be burned (except to such extent as is essential to prevent injury to property from freezing) for the purpose of supplying heat for:

(A) Any business or professional offices, except offices used by the United States, State, County, or municipal Governments, transportation companies, or which are occupied by banks and trust companies or by physicians or dentists;

(B) Wholesale or retail stores, or any other stores, business houses, or buildings whatever, except that for the purpose of selling food only, for which purposes stores may maintain necessary heat until 12 o'clock noon; and for the purpose of selling drugs and medical supplies only, stores may maintain necessary heat throughout the day and evening;

(C) Theatres, moving picture houses, bowling alleys, billiard rooms, private or public dance halls, or any other place of amusement.

On the above specified Mondays no fuel shall be burned for the purpose of heating rooms or buildings in which liquor is sold on those days.

No fuel shall be burned on any of the foregoing specified Mondays for the purpose of supplying power for the movement of surface, elevated, subway, or suburban cars or trains in excess of the amount used on the Sundays previous thereto.

The order provides that nothing in this order shall be held to forbid the burning of fuel to heat rooms or such portions of buildings as are used in connection with the production or distribution of fuel.

The State Fuel Administrators are authorized by the order to issue orders on special applications for relief, where necessary, to prevent injury to health or destruction of or injury to property by fire or freezing.

The order is effective in all of the territory of the United States east of the Mississippi River, including the whole of the States of Louisiana and Minnesota.

The Supplemental Statement.—The Fuel Administration issued the following supplemental statement with regard to the coal order:

The unprecedented adverse weather conditions of recent weeks and the inadequacy of the present coal supply and transportation facilities to meet the enormous wartime demand, have made necessary immediate restrictive measures as to the use of coal in that part of the United States east of the Mississippi River.

The movement of coal in transportation must be so directed as to aid the Director General of Railways in dealing with the railroad emergency created by recent blizzard conditions. Domestic consumers of coal must be kept warm, and other absolutely necessary consumers must be supplied.

All industry must be equally restricted in its use of coal in order that the available supply for the remainder of the winter may be properly distributed and may be made sufficient, for absolutely essential needs during the remainder of the winter.

To meet these necessities, the Fuel Administration has ordered as an immediate emergency measure that on the days of Jan. 18, 19, 20, 21, and 22 preference and priority in the use of coal shall be given only to those consumers whose consumption of coal is absolutely necessary. These include in order: Railroads, domestic consumers, hospitals and charitable institutions, public utilities, ships at tidewater for bunker purposes, United States Government use, municipal or county Governments for necessary public use, manufacturers of perishable food or food for immediate consumption.

During the five days designated no manufacturing industry shall be allowed to operate even if it has its coal supply on hand. By this means all industry will be placed on an equal footing and each will be called upon to make its share of the sacrifice necessary to maintain the nation at the highest possible point of military and economic efficiency for the prosecution of the war.

In addition to this emergency restriction over the designated five days, the Fuel Administration has ordered that all use of fuel except by consumers classed as absolutely necessary shall be prohibited on Monday of each week from Jan. 21 to March 25; that is, on Jan. 21 and 28, Feb. 4, 11, 18, and 25, and March 4, 11, 18, and 25.

The order under which these restrictions are made is designed to distribute with absolute impartiality the burden of patriotic denial. All classes of business are treated alike.

Except on the days covered in the order, the normal supply of coal to all consumers will be maintained. The necessary consumers designated in the order are given preference and priority in the delivery and use of coal at all times as well as on the days when other use of coal is prohibited.

The United States Fuel Administration counts upon the complete patriotic coöperation of every individual firm and corporation affected by the order in its enforcement. Every effort will be made by the Fuel Administration and other Government officials charged with the enforcement of the order to carry out the plan proposed without undue interference with the ordinary course of business.

It is the earnest desire of the Fuel Administration to prevent entirely any dislocation of industry or of labor.

On such short notice it was but natural that business interests should view with considerable apprehension the shutting down of their manufacturing plants for a period of five days. In the face of all this, however, the country rallied nobly to the support of a measure, it was realized only the most dire necessity could dictate. With surprisingly little confusion arrangements were made by the heads and the directors of large businesses and commercial enterprises to afford the utmost possible coöperation to the government in its attempt at fuel conservation.

The Fuel Regulations: Full Text.—On Friday, January 18th, the full text of the fuel regulation, dated January 17, 1918, at Washington, appeared in the newspapers. The complete text of this order follows:

The United States Fuel Administrator, acting under the authority of an executive order of the President of the United States dated 23d August, 1917, appointing said Administrator, in furtherance of the purposes of the said order and of the purposes of the act of Congress therein referred to, approved 10th of August, 1917, and finding it essential effectively to carry out the provisions of this act to make provision for a more adequate supply of fuel for railroads, domestic consumers, public utilities, and for other uses necessary to the national security in certain parts of the United States, hereby makes and prescribes the following regulation:

Section 1

Until further order of the United States Fuel Administrator, all persons selling fuel, in whatever capacity, shall, in filling their contracts or orders now on hand, give preference to necessary current requirements of railroads, domestic consumers, hospitals, charitable institutions, army and navy cantonments, public utilities, by-product coke plants supplying gas for household use, telephone and telegraph plants, shipping for bunker purposes, the United States for strictly governmental purposes (not including factories or plants working on contracts for the United States), manufacturers of perishable food or of food for necessary immediate consumption, and municipal, county, or State Governments for necessary public uses. Any tonnage remaining after the foregoing preferred shipments have been made may be applied in filling any other contracts or orders.

Section 2

On the following days, namely, Jan. 18, 19, 20, 21, and 22, 1918, the State Fuel Administrators and their accredited representatives in the various communities in the territory in which this regulation applies are hereby empowered and directed to divert such fuel as arrives in such communities in carload lots to meet the current requirements and to provide an adequate and normal supply for such consumers of fuel as are specified in Section 1 hereof.

Section 3

On the following days, namely, Jan. 18, 19, 20, 21, and 22, 1918, and also on each and every Monday, beginning Jan. 28, 1918, and continuing up to and including March 25, 1918, no manufacturer or manufacturing plant shall burn fuel or use power derived from fuel for any purpose, with the following exceptions:

(A) Plants which necessarily must be continuously operated seven days each week to avoid serious injury to the plant itself or its contents may use only such quantity of fuel as is necessary to prevent such injury to the plant or its contents.

(B) Manufacturers or plants manufacturing perishable foods or foods for necessary immediate consumption.

(C) Manufactures of foods not perishable and not necessary for immediate consumption may burn fuel to the extent authorized by the Fuel Administrator of the State in which such plant is located or by his duly authorized representative upon application by the United States Food Administrator.

(D) Plants necessary to the printing and publication of daily papers may burn fuel or use power derived therefrom as usual, except that on every Monday from Jan. 21 to March 25, 1918, inclusive, they may burn fuel or use power derived therefrom only to such extent as is necessary to print and publish such editions as such plants customarily do print and publish on legal holidays other than the Sabbath; or, if such plants do not customarily print or publish any editions on such legal holidays, they may burn fuel or use such power to such extent as is necessary to issue one edition on the said Mondays.

(E) Printing establishments may burn fuel on Jan. 18, 19, 20, 21, and 22, 1918, to such extent as is necessary to issue current numbers of magazines and other publications periodically issued.

Section 4

On each Monday, beginning Jan. 21, 1918, and continuing up to and including Monday, March 25, 1918, no fuel shall be burned (except to such extent as is essential to prevent injury to property from freezing) for the purpose of supplying heat for:

(A) Any business or professional offices, except offices used by the United States, State, county, or municipal Governments, transportation companies, public utility company, telephone or telegraph companies, banks, trust companies, physicians, or dentists.

(B) Wholesale or retail stores or any other stores, business houses, or business buildings whatever, except that, for the purpose of selling food only, stores may maintain necessary heat on any of the specified days until 12 o'clock noon; and except that for the purpose of selling drugs and medical supplies only, stores may maintain necessary heat throughout the day and evening.

(C) Theatres, moving-picture houses, bowling alleys, billiard rooms, private or public dance halls, or any other place of public amusement.

Section 5

On each Monday, beginning Jan. 21, 1918, and continuing up to and including March 25, 1918, no fuel shall be burned for the purpose of heating rooms in which intoxicating liquor is sold or served on those days.

Nothing in this regulation shall be construed to forbid the heating of restaurants, hotels or other places in which meals are served, but in which no intoxicating liquor is sold or served on the said Mondays.

Section 6

No fuel shall be burned on any of the Mondays specified in the foregoing section for the purpose of supplying power for the movement of surface, elevated, subway, or suburban cars or trains in excess of the amount used on the Sunday previous thereto.

Section 7

Nothing in this regulation shall be construed to apply to or affect the operation of any mine or plant producing fuel, nor shall this regulation be construed to forbid the heating of such rooms or offices, or such portions of buildings, as are used in connection with the production, transportation, or distribution of fuel.

Section 8

State Fuel Administrators and their representatives specifically authorized so to do are hereby empowered to grant such relief as may be essential to prevent injury to health or to prevent destruction of or injury to property by fire or freezing.

Section 9

This regulation is effective throughout the United States east of the Mississippi River, including the whole of the States of Louisiana and Minnesota.

Section 10

Any person, firm, association, or corporation which violates or refuses to conform to the above regulation may be liable to the penalty prescribed in the aforesaid act of Congress.

The Country's Response.—Never before has such a measure been made necessary in this country. It has brought us abruptly face to face with one of war's real emergencies. The country as a whole has responded eagerly to the President's attempt to relieve its condition, realizing that the motives inspiring him and his Fuel Administrator, Doctor Garfield, were conceived in the spirit of the purest patriotism, dictated by extreme necessity, and could only be effective if carried out with a spirit of absolute and thorough coöperation. The nation realized that whether individually it might or might not agree with the order, it was essential that the directions and desires of the men, in whom it had placed its confidence during the war period must be obeyed to the letter to bring that war to a successful conclusion as speedily as possible.

At first many divisions of industry deemed the conditions imposed upon them unnecessarily harsh, yet sober reflection convinced them that the order's absolute justice, in that it put a temporary stop to all manufacturing activities, was as fair to them as to the other manufacturing interests. In the beginning it seemed, naturally, that more hardship would be encountered than was actually the case. The execution of the order proved far less drastic and harsh than it had seemed it would upon its issue. Labor employed by the hour or on piece work is bound to suffer to some extent, yet many manufacturers have taken cognizance of this fact and are arranging various schemes whereby hardship may be diminished among their employees. Eventually the benefit derived from the fuel order may well prove greater than we have at first imagined, for the carrying out of such schemes as those just indicated, when capital shows an active and beneficent interest in the hardships and straightened condition of labor, should produce more of that essential spirit of coöperation, in which this country is so notably lacking, between the employer and the employee.

President Wilson's Statement.—Also, in bringing us face to face with war conditions in actual form, we are better in a position to realize and appreciate our true responsibilities incumbent upon us on account of our entrance into the World War. President Wilson, in the following statement, expressed his approval of the Garfield order for the closing of industries, and explained the reason for such action in our vital national emergency.

> I was, of course, consulted by Mr. Garfield before the fuel order of yesterday was issued, and fully agreed with him that it was necessary, much as I regretted the necessity.
>
> This war calls for many sacrifices, and sacrifices of the sort called for by this order are infinitely less than sacrifices of life which might otherwise be involved. It is absolutely necessary to get the ships away, it is absolutely necessary to relieve the congestion at the ports and upon the railways, it is absolutely necessary to move great quantities of food, and it is absolutely necessary that our people should be warmed in their homes, if nowhere else; and halfway measures would not have accomplished the desired ends.
>
> If action such as this had not been taken, we should have limped along from day to day with a slowly improving condition of affairs with regard to the shipment of food and of coal, but without such immediate relief as had become absolutely necessary because of the congestions of traffic which have been piling up for the last few months.
>
> I have every confidence that the result of action of this sort will justify it and that the people of the country will loyally and patriotically respond to necessities of this kind as they have to every other sacrifice involved in the war. We are upon a war footing, and I am confident that the people of the United States are willing to observe the same sort of discipline that might be involved in the actual conflict itself.

Quite in accordance with his usual keen appreciation of national psychology the President has rightly interpreted the manner in which the country will react to necessity, and the way in which thought is bound to convince it of the wisdom, both with regard to the present and the future, of the course pursued by him and his Fuel Administrator in this crisis.

POLITICS AND PARTIES

James Albert Woodburn

Non-Partisan Patriotic Support of the War.—Perhaps no year in American history, certainly none within the memory of living men, has witnessed so little attention given to partisan activity and party politics as the year 1917. Public interest and attention have been absorbed by the World War, of which the United States has become an important factor. It has not been an election year. For this reason partly, but chiefly because of the absorbing interest of the war and its national and defensive character, and because of the patriotic desire and disposition of the great political parties to unite in the war's support, we have witnessed less political and party activity than has been manifest in any previous war in American history. Politics and party strife have been submerged in the great national crisis.

The war is conducted nominally under a Democratic administration but it has been supported loyally and effectively by the great leaders as well as by the rank and file of the party out of power. Only petty politicians and little local party editors who are more concerned about winning the offices than winning the war have voiced a spirit of party faction toward the conduct of the war. While there has been some general criticism of President Wilson because he has not formed a coalition cabinet or because he has not assigned more Republicans and opposition leaders to important posts, or called such men more generally into his war councils, yet there has not been organized nor engendered any serious party opposition to the war; nor has a tendency appeared among opposition party leaders to seek party advantage from its conduct. Mr. Roosevelt and Mr. Taft, the two Republican ex-presidents, Mr. Hughes, the Republican candidate for president in 1916, Mr. Root, one of the party's most distinguished leaders, Republican governors like Whitman in New York, McCall, in Massachusetts, Goodrich in Indiana, Lowden in Illinois, the old line Republican leaders in Congress, notably Mr. Lodge and Mr. Smoot in the Senate and Mr. Julius Kahn of California, the real leader in the House of Repesentatives in support of President Wilson's war measures and policies—all these Republican leaders, and numerous others, have been as loyal, ardent and devoted in their support of the war as have any leaders within Mr. Wilson's own party. The Republican members of the Senate Committee on Military Affairs have been moderate and impartial. They have not sought to embarrass the Government by carping and captious criticism; nor, so far as outward evidence shows, have they attempted to obtain partisan advantage from any mistakes the War Department may have made. On the other hand, President Wilson suggested to the Minnesota Democrats that Senator Knute Nelson, Republican, a thorough American and a loyal supporter of the war, should be reëlected to the Senate by both parties, in keeping with the general non-partisan feeling and action of Americans at this time. This is such non-partisan cooperative patriotism as the people approve, whose only platform of one plank is, "Win the War!" There have been pacifists and pro-Germans; there have been selfish materialism, indifferentism, and ignorance of the war's causes. But it may safely be said that throughout American history the country has never been more united in the prosecution of any war than it has been in the prosecution of the present war against Prussian autocracy and brutal power.

The Pacifist Socialists.—The exception has been in the transformation of the Socialist Party—or a remnant of it—into a pacifist and seemingly disloyal organization. Those in control of the Socialist party organization have succeeded in committing it to a pro-German attitude. By a referendum among the voters of the party its members endorsed by a large majority the statement that our war with Germany was unjustified. The New York City Socialists, in their city convention which nominated Mr. Morris Hillquit for mayor, demanded the repeal of the conscription law and urged the sending of delegates to the international peace conference at Stockholm. Mr. Hillquit refused to subscribe for Liberty Bonds and, refusing to sanction the war by word or deed, solicited votes on the basis of America's immediate withdrawal from the war even at the expense of a German peace. The party appeared to have become a disloyal faction, seeking to embarrass the Government in all its war activities and preparations.

A press report from Chicago, dated Dec. 22, stated that Socialists were to raise a million-dollar fund to conduct the 1918 Congressional campaign and to defend members of the Socialist party who have been accused by the Government of anti-American acts and utterances. Oliver C. Wilson, Ill., secretary of the National Socialist party, was elected treasurer of the fund.

These Socialists of the extreme left, who may be called the American Bolsheviki, continued to get up peace parades in a number of cities; they called for the repeal of the draft law; circulated anti-draft protests, for which some of them were arrested in Philadelphia. Federal agents took possession of the Chicago Socialist headquarters and their documents; an indictment of the Chicago leaders was called for by the United States District Attorney, for obstructing the Government and violating the Espionage law (Sept.). The American Alliance for Labor and Democracy issued a statement calling Socialists disloyal. Mr. Meyer London, the Socialist who represents a New York City district in Congress, who alone voted against the recognition of a state of war with Austria, introduced early in August a resolution to have all the Allies send delegates to Washington to discuss terms of peace.

This attitude of the Socialist party towards the war alienated its more moderate members, its intellectuals, and its ablest leadership. Mr. Charles E. Russell, an ardent supporter of the war, who had been the Socialist candidate for president in 1916, openly abandoned the party. He accepted President Wilson's appointment as a member of the Root Commission to Russia. J. G. Phelps Stokes and his wife, who had fought the battles of socialism for many years, resigned from the party and announced that a new organization would be formed which would "put America first." Upton Sinclair, John Spargo, C. M. Wright, Dr. J. Bohn—these men representing the intelligent leadership and the humanitarian spirit of the Socialists—on account of its war policy, left the party until the war could be fought to a finish.

The Non-Partisan League.—The rise of the Non-Partisan League has assumed national importance in politics. This League resulted from a political movement chiefly among farmers in the upper Mississippi valley. It was organized in North Dakota in 1916, but during that year it was still unknown to the country at large, although it had exercised a decisive influence in the primary elections of North Dakota and had carried one of its members and advocates, Governor Frazier, into the governorship. Its purpose was to safeguard the interests of farmers and producers and to detach men in their voting and in their choice of lawmakers from the trammels of traditional parties and politics. It had among its membership a large rural element stoutly opposed to having America drawn into the war, and after a state of war was recognized this constituency continued to be tinged with pacifism. During 1917 this League extended its influence into adjoining agricultural states. A Conference of the League was held at St. Paul, Minn., Sept. 19-22, 1917. Governor Frazier, of North Dakota, presided during its sessions. Mr. A. C. Townley, president of the League, explained its purposes and the purposes of the Conference. He disclaimed disapproval by farmers of Government price-fixing of wheat at $2.20 a bushel, but he insisted that the Government should be consistent and also fix at reasonable prices other materials that enter into the products that farmers are compelled to buy—coal, iron, steel, oil, and other commodities. He scored the "profiteers" and denounced the influence of legislation and government which these moneyed profiteers were exerting in Washington.

Senator La Follette's Disloyal Attitude.—Senator La Follette, of Wisconsin, Senator Gronna, of North Dakota, Senator Borah, of Idaho, and Congresswoman Jeanette Rankin, of Montana, spoke before the Conference. Senator La Follette took advantage of the occasion to speak in his usual vein in denunciation of the war, and he was guilty, according to the Associated Press reports, of the shameful assertions that the United States had no real reason for entering the war with Germany; that the sinking of the *Lusitania* was a "technicality," and that those of his countrymen, and their women and their children, who had been foully murdered at sea by the orders of the Imperial German Government were merely "joyriders" who had taken foolhardy risks after being reasonably warned; that the right of American citizens to sail the seas against the orders of Germany deserved no support nor vindication from their Government, since they were unwise enough to embark on a munition-laden ship booked for the war zone.

This disgraceful and disloyal utterance of a Senator of the United States became the subject of investigation by the Senate, as numerous demands from all parts of the country poured in on that body for the expulsion of La Follette. But it was evident that his disloyal spirit did not represent the Conference of the Non-Partisan League. The Conference adopted a resolution pledging full loyalty to the national cause in the war. The resolutions further recommended the confiscation of war profits by maximum taxation to pay for the war; the control by the Government of the retail price of bread as well as of wheat; loans to farmers to buy seed wheat; a general land tax of two per cent.; an income tax that would make impossible any individual income of more than $100,000 a year; public ownership of mines and railways; an increase in the pay of common soldiers in active service; government operation for the duration of the war of industries liable to be impeded by strikes; coöperation between farmers and labor unions; and the restriction of immigration.

Extension of the Non-Partisan League.—Pursuing the suggestion of the Non-Partisan League of a union between farmers and labor unions, a mass meeting was held in New York City during the first week in December, at which it was decided to form an organization in New York similar to the Farmers' Non-Partisan League in the Northwest. A committee consisting of five Grangers and five labor union men was instructed to call a convention in the near future for the purpose of putting the Farmers' Non-Partisan League on a permanent basis in the East, with the object of formulating a programme by which the farmers and laborers can make a joint fight to influence state and national legislation with a view to eliminating the middleman and his excessive profits by coöperative organization. Effective influence on politics and parties may be expected from this source in the near future. At this mass meeting, Chairman John Mitchell of the New York Food Commission presided. The principal speakers were A. C. Townley, president of the Non-Partisan League, John Dillon, of the New York State Department of Foods and Markets, and Congressman Baer, whom the League elected to Congress from North Dakota.

The Elections.—The only notable elections of the year were the state elections in Massachusetts and Virginia and the city elections of New York and Chicago. In Virginia the Democrats elected their candidate for Governor, Mr. Westmoreland Davis, while the Massachusetts Republican Governor, Samuel W. McCall, was reelected—a suitable endorsement of a worthy administration. In New York City, by Judge Hylan's election over Mayor Mitchel, Tammany returned to the control of the entire city government. The election of the Tammany candidate was due largely to the influence of Hearst and Murphy and the political forces which they represent, but also partly to differences and divisions on sectarian and educational matters. Hillquit, the Socialist candidate, representing dissatisfied and pacifist elements, came in third in the running, receiving almost as many votes as Mayor Mitchel, the Fusionist candidate. The Republican candidate, Mr. Bennett, came fourth, receiving but a small part of his party's normal vote in the city. Real fusion against the Tammany candidate had not successfully been accomplished. Judge Hylan announced after his election that he was not opposed to the war and that he would faithfully support the Administration of President Wilson in its vigorous prosecution.

The Fusion forces in Chicago who were opposed to the Socialists and to the objectional and factious course of Mayor Thompson were successful in the election, which was interpreted as a decisive popular support of the American cause in the war.

The People's Council.—A manifestation of pacifist and anti-war partisanship was seen in an organization called the People's Council and in one of its branches known as the Workingmen's Council, which claimed the right to speak for American labor. The officers of these allied bodies called a convention to meet in Minneapolis during the first week in September to promote pacifist propaganda and to oppose America's prosecution of the war. This appeared to the country like an effort designed to "give aid and comfort to the enemy," and to prevent America from attaining victory in the war. The American Federation of Labor, through Mr. Gompers, the president, repudiated the claim of the People's council to represent American labor. The opponents of the People's Council within labor circles organized a counter movement in July under the name of the American Alliance for Labor and Democracy. This latter body called a convention to meet at Minneapolis during the same week appointed for the convention of the People's Council. The convention of the People's Council was looked upon generally as a disloyal assembly and the Governor of Minnesota forbade its meeting in that state. It was likewise refused hospitality in North Dakota, Wisconsin, and the District of Columbia. In the attempt of its managers to meet in Chicago they were supported by Mayor Thompson of that city, while Governor Lowden of Illinois ordered the state troops to prevent their meeting. Their first meeting in Chicago, in Mayor Thompson's absence, was broken up by the police.

The conference of the American Alliance for Labor and Democracy was held in Minneapolis early in September as originally planned. It advocated loyal support of the war "as the best hope for labor and democracy, in order that humanity might win over organized autocracy and Prussian militarism." It pledged unswerving adherence "to the cause of democracy now assailed by the forces of autocracy and militarism" and it denounced as enemies of the Republic those who, "falsely claiming to speak in the name of labor and democracy, are now ceaselessly striving to obstruct the operation of the war."

Patriotism of the American Federation of Labor.—Later at Buffalo in the national convention of the American Federation of Labor, that great representative body of laboring men, after listening to a stirring address by President Wilson, went on record by positive resolutions in loyal support of the national cause in the war. Thus American labor forces became a powerful factor in promoting the sinking of party and political differences and the merging of all parties in the common cause of the nation in the war.

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II. INTERNATIONAL RELATIONS

CHARLES H. ALBRECHT

INTERNATIONAL RELATIONS OF THE UNITED STATES

Entente Replies to President Wilson's Note of Dec. 18, 1917.—To President Wilson's suggestion in his identic notes to the belligerents of Dec. 18, 1917 (*A. Y. B.*, 1916, p. 97-98) to make "an avowal of their respective views as to the terms upon which the war might be concluded and the arrangements which would be deemed satisfactory as a guaranty against its renewal or the kindling of any similar conflict in the future," the Entente governments replied under date of Jan. 10. While recognizing "the lofty sentiments inspiring the American note" and "the benefits which will accrue to the cause of humanity and civilisation from the institution of international arrangements designed to prevent violent conflicts between nations, and so framed as to provide the sanctions necessary to their enforcement," they state that "in their judgment it is impossible to obtain at this moment such a peace as will not only secure to them the reparation, the restitution, and the guarantees justly due to them by reason of the act of aggression, the guilt of which is fixed upon the Central Powers, while the very principle from which it sprang was undermining the safety of Europe; and at the same time such a peace as will enable the future of the European nations to be established upon a sure foundation." After adverting to the "catalogue of crimes" which had been perpetrated by Germany in connection with the war, they refer to their reply to the German note of Dec. 12 (*A. Y. B.*, 1916, p. 97-99) as an "avowal of their views as to the terms upon which the war might be concluded."

With reference to President Wilson's desire for an expression of their aims the note continues:

> Their aims in this war are well known, for they have been repeatedly expressed by the heads of their several Governments. These aims can only be formulated in detail, with all the just compensations and indemnities due for the losses suffered, when the moment for negotiation arrives. But the civilised world knows that they include, primarily and of necessity, the restoration of Belgium, of Serbia, and of Montenegro, with the compensations due to them; the evacuation of the invaded territories in France, Russia, and Roumania, with fitting reparation; the reorganisation of Europe, guaranteed by a stable settlement, based alike upon the principle of nationalities on the right which all peoples, whether small or great, have to the enjoyment of full security and free economic development, and also upon territorial agreements and international arrangements so framed as to guarantee land and sea frontiers against unjust attacks; the restitution of provinces or territories formerly torn from the Allies by force or contrary to the wishes of their inhabitants; the liberation of Italians, Slavs, Roumanians, Czechs, and Slovaks from foreign domination; the liberation of the peoples who now lie beneath the murderous tyranny of the Turks and the expulsion from Europe of the Ottoman Empire, which has proved itself so radically alien to Western civilisation.
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> The intentions of His Majesty the Emperor of Russia in regard to Poland, have been clearly shown in the proclamation which he has just addressed to his armies.
>
> It is hardly necessary to add that, while it is the wish of the Allies to rescue Europe from the brutal encroachments of Prussian militarism, it has never been their intention, as has been alleged, to seek the extermination or the political extinction of the Germanic peoples. The chief aim of the Allies is to assure peace on those principles of liberty, justice, and inviolable fidelity to international obligations, which have never ceased to inspire the action of the United States.
>
> With this high end in view, the Allied Governments are each and all determined to put forth all their strength and to endure every sacrifice in order

that they may press to a victorious close a conflict on which, they are convinced, depend not only their own safety and prosperity, but the very future of civilisation.

To this reply was adjoined one from the Belgian Government, setting forth particularly the hardships suffered by Belgium as a result of German invasion and occupation.

On Jan. 11 Germany handed the neutral governments a note protesting the sincerity of Germany's peace offer and attacking the sincerity of the Entente reply thereto (*A. Y. B.*, 1916, p. 97-99) and the Entente methods of warfare, while defending those resorted to by Germany. Similar but not identic notes were also forwarded to neutrals by the Austro-Hungarian and Turkish Governments.

An amplification of certain portions of the Entente reply to President Wilson's proposals was embodied in a note dated Jan. 13 from the British Minister of Foreign Affairs to the British Ambassador at Washington, delivered to the State Department by the latter on Jan. 16. Mr. Balfour's note again emphasized the point that no peace can be lasting if built on "foundations which are essentially and hopelessly defective."

> This becomes clearly apparent if we consider the main conditions which rendered possible the calamities from which the world is now suffering. These were the existence of a Great Power consumed with the lust of domination, in the midst of a community of nations ill-prepared for defence, plentifully supplied, indeed, with international laws, but with no machinery for enforcing them, and weakened by the fact that neither the boundaries of the various States nor their internal constitution harmonised with the aspirations of their constituent races, or secured to them just and equal treatment.
>
> That this last evil would be greatly mitigated if the Allies secured the changes in the map of Europe outlined in their joint Note is manifest.

After setting forth the reasons for the inclusion of the expulsion of the Turks from Europe in the aims of the Allies the note adds that even the readjustments of the map of Europe indicated in the Allies' reply, "though they may diminish the occasions of war, provide no sufficient scarcity against its recurrence" as long as the present *régime* in Germany with its disregard for international treaties and the rights of small nations is able to continue its policy of militarism and terrorism. The people of Great Britain, the note concludes,

> do not believe that peace can be durable if it be not based on the success of the Allied cause. For a durable peace can hardly be expected unless three conditions are fulfilled. The first is that the existing causes of international unrest should be, as far as possible, removed or weakened. The second is that the aggressive aims and the unscrupulous methods of the Central Powers should fall into disrepute among their own peoples. The third is that behind international law, and behind all treaty arrangements for preventing or limiting hostilities, some form of international sanction should be devised which would give pause to the hardiest aggressor.

"Peace Without Victory."—On Jan. 22, 1917, President Wilson addressed the Senate on the subject of his efforts toward peace and characterized the replies of the two sets of belligerents to his identic notes in the following terms:

> The Central Powers united in a reply which stated merely that they were ready to meet their antagonists in conference to discuss terms of peace. The Entente Powers have replied much more definitely and have stated, in general terms, indeed, but with sufficient definiteness to imply details, the arrangements, guarantees, and acts of reparation which they deem to be the indispensable conditions of a satisfactory settlement.

The President then points out the service which the United States can render toward the eventual establishment of a stable peace, in which "great enterprise . . . it is inconceivable that the people of the United States should play no part."

> That service is nothing less than this; to add their authority and their power to the authority and force of other nations, to guarantee peace and justice throughout the world. . . . It is right that before it comes this Government should frankly formulate the conditions upon which it would feel justified in asking our people to approve its formal and solemn adherence to a League for Peace. I am here to attempt to state those conditions.
>
> The present war must first be ended. . . . The treaties and agreements which bring it to an end must embody terms which will create a peace that is worth guaranteeing and preserving, a peace that will win the approval of mankind, not merely a peace that will serve the several interests and immediate aims of the nations engaged. We shall have no voice in determining what those terms shall be, but we shall, I feel sure, have a

voice in determining whether they shall be made lasting or not by the guarantees of a universal covenant; and our judgment upon what is fundamental and essential as a condition precedent to permanency should be spoken now, not afterwards, when it may be too late.

No covenant of coöperative peace that does not include the peoples of the New World can suffice to keep the future safe against war; and yet there is only one sort of peace that the peoples of America could join in guaranteeing. The elements of that peace must be elements that engage the confidence and satisfy the principles of the American governments, elements consistent with their political faith and with the practical convictions which the peoples of America have once for all embraced and undertaken to defend.

The characteristics of such a peace worth securing "by the organized major force of mankind" are then laid down by the President as follows:

> They imply, first of all, that it must be a peace without victory. . . . Victory would mean peace forced upon the loser, a victor's terms imposed upon the vanquished. It would be accepted in humiliation, under duress, at an intolerable sacrifice, and would leave a sting, a resentment, a bitter memory upon which terms of peace would rest, not permanently, but only as upon quicksand. . . .
>
> The equality of nations upon which peace must be founded if it is to last must be an equality of rights. . . .
>
> And there is a deeper thing involved than even equality or right among organized nations. No peace can last, or ought to last, which does not recognize and accept the principle that governments derive all their just powers from the consent of the governed, and that no right anywhere exists to hand peoples about from sovereignty to sovereignty as if they were property. I take it for granted, for instance, if I may venture upon a single example, that statesmen everywhere are agreed that there should be a united, independent, and autonomous Poland, and that henceforth inviolable security of life, of worship, and of industrial and social development should be guaranteed to all peoples who have lived hitherto under the power of governments devoted to a faith and purpose hostile to their own. . . .
>
> So far as practicable, moreover, every great people now struggling towards a full development of its resources and of its powers should be assured a direct outlet to the great highways of the sea. . . .
>
> And the paths of the sea must alike in law and in fact be free. . . .
>
> It is a problem closely connected with the limitation of naval armaments and the coöperation of the navies of the world in keeping the seas at once free and safe, and the question of limiting naval armaments opens the wider and perhaps more difficult question of the limitation of armies and of all programmes of military preparation. . . . Peace cannot be had without concession and sacrifice. There can be no sense of safety and equality among the nations if great preponderating armaments are henceforth to continue here and there to be built up and maintained. . . . The question of armaments, whether on land or sea, is the most immediately and intensely practical question connected with the future fortunes of nations and of mankind.

"Speaking as an individual and yet . . . as the responsible head of a great government," and "for liberals and friends of humanity in every nation," the President in memorable words sums up his proposals:

> I am proposing, as it were, that the nations should with one accord adopt the doctrine of President Monroe as the doctrine of the world: that no nation should seek to extend its polity over any other nation or people, but that every people should be left free to determine its own polity, its own way of development, unhindered, unthreatened, unafraid, the little along with the great and powerful.
>
> I am proposing that all nations henceforth avoid entangling alliances which would draw them into competitions of power, catch them in a net of intrigue and selfish rivalry, and disturb their own affairs with influences intruded from without. . . .
>
> I am proposing government by the consent of the governed: that freedom of the seas which in international conference after conference representatives of the United States have urged with the eloquence of those who are the convinced disciples of liberty; and that moderation of armaments which makes of armies and navies a power for order merely, not an instrument of aggression or of selfish violence.
>
> These are American principles, American policies. We could stand for no others. And they are also the principles and policies of forward looking men and women everywhere, of every modern nation, of every enlightened community. They are the principles of mankind and must prevail.

Ruthless Submarine Warfare.—The idea of a "peace without victory" after all the sacrifices of the war was not kindly received by the Entente press. However, further discussion of the note was cut off by the declaration of ruthless submarine warfare contained in a note of the German Ambassador of Jan. 31, acknowledging a copy of the President's address of Jan. 22 and stating that Germany, too, desires a stable peace and is in accord with the "main tendencies" enunciated by President Wilson. The note then refers to the failure of the German peace proposals in which failure it sees the desire of the Entente to "oppose the will of destruction . . . to the wish of reconciliation," adding that "a new situation has thus been created which forces Germany to new decisions." What these "new decisions" are is indicated in the enclosures to the note which proclaim Germany's intention to prevent "all navigation, that of neutrals included, from and to England, from and to France, etc., etc.," by sinking all ships met within a zone around Great Britain, France, Italy and in the Eastern Mediterranean. All sea traffic within these zones "will be stopped with every available weapon and without further notice." This is characterized by the note as a counteraction to the "blockade" policy of Great Britain.

> The Imperial Government, therefore, does not doubt that the Government of the United States will understand the situation thus forced upon Germany by the Entente-Allies' brutal methods of war and by their determination to destroy the Central Powers, and that the Government of the United States will further realize that the now openly disclosed intentions of the Entente-Allies give back to Germany the freedom of the action which she reserved in her note addressed to the Government of the United States on May 4, 1916. (See *A. Y. B.*, 1916, p. 61.)

The second enclosure to the note concludes:

> Neutral ships navigating these blockade zones do so at their own risk. Although care has been taken, that neutral ships which are on their way toward ports of the blockade zones on Feb. 1, 1917, and have come in the vicinity of the latter, will be spared during a sufficiently long period it is strongly advised to warn them with all available means in order to cause their return.
>
> Neutral ships which on Feb. 1, are in ports of the blockaded zones, can, with the same safety, leave them if they sail before Feb. 5, 1917, and take the shortest route into safe waters.
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> The instructions given to the commanders of German submarines provide for a sufficiently long period during which the safety of passengers on unarmed enemy passenger ships is guaranteed.
>
> Americans, en route to the blockade zone on enemy freight steamers, are not endangered, as the enemy shipping firms can prevent such ships in time from entering the zone.
>
> Sailing of regular American passenger steamers may continue undisturbed after Feb. 1, 1917, if
>
> (a) the port of destination is Falmouth;
> (b) sailing to or coming from that port course is taken via the Scilly Islands and a point 50 degrees north 20 degrees west;
> (c) the steamers are marked in the following way which must not be allowed to other vessels in American ports (marks indicated);
> (d) one steamer a week sails in each direction with arrival at Falmouth on Sunday and departure from Falmouth on Wednesday;
> (e) the United States Government guarantees that no contraband (according to German contraband list) is carried by those steamers.

Breach of Diplomatic Relations.—The issue raised by the German Government was promptly met. On Feb. 3 the Secretary of State addressed a note to the German Ambassador acknowledging the receipt of his note of Jan. 31 and quoting the assurances contained in the notes of the German Government of April 18 and May 4, 1916, and the reply thereto of this Government dated May 8, 1916 (*A. Y. B.*, 1916, p. 61). After quoting from the memorandum accompanying the note of Jan. 31, Secretary Lansing continues:

> In view of this declaration, which withdraws suddenly and without prior intimation the solemn assurance given in the Imperial Government's note of May 4, 1916, this Government has no alternative consistent with the dignity and honor of the United States but to take the course which it explicitly announced in its note of April 18, 1916, it would take in the event that the Imperial Government did not declare and effect an abandonment of the methods of submarine warfare then employed and to which the Imperial Government now purposes again to resort.
>
> The President has, therefore, directed me to announce to Your Excellency that all diplomatic relations between the United States and the German Empire are severed, and that the American ambassador at Berlin will be immediately withdrawn, and in accordance with such announcement to deliver to Your Excellency your passports.

On the same day the President appeared before Congress and announced the breach of diplomatic relations and the reason therefor. His address concluded:

> Notwithstanding this unexpected action of the German Government, this sudden and deplorable renunciation of its assurances, given this Government at

one of the most critical moments of tension in the relations of the two Governments, I refuse to believe that it is the intention of the German authorities to do in fact what they have warned us they will feel at liberty to do. I cannot bring myself to believe that they will indeed pay no regard to the ancient friendship between their people and our own or to the solemn obligations which have been exchanged between them, and destroy American ships and take the lives of American citizens in the willful prosecution of the ruthless naval programme they have announced their intention to adopt. Only actual overt acts on their part can make me believe it even now.

If this inveterate confidence on my part in the sobriety and prudent foresight of their purpose should unhappily prove unfounded; if American ships and American lives should in fact be sacrificed by their naval commanders in heedless contravention of the just and reasonable understandings of international law and the obvious dictates of humanity, I shall take the liberty of coming again before Congress to ask that authority be given me to use any means that may be necessary for the protection of our seamen and our people in the prosecution of their peaceful and legitimate errands on the high seas. I can do nothing less. I take it for granted that all neutral Governments will take the same course.

We do not desire any hostile conflict with the Imperial German Government. We are the sincere friends of the German people and earnestly desire to remain at peace with the Government which speaks for them. We shall not believe that they are hostile to us unless and until we are obliged to believe it; and we purpose nothing more than the reasonable defense of the undoubted rights of our people. We wish to serve no selfish ends. We seek merely to stand true alike in thought and in action to the immemorial principles of our people which I have sought to express in my address to the Senate only two weeks ago—seek merely to vindicate our right to liberty and justice and an unmolested life. These are the bases of peace, not war. God grant that we may not be challenged to defend them by acts of willful injustice on the part of the Government of Germany!

Count von Bernstorff was handed his passports during the day and negotiations were opened with the Entente governments for safe-conducts for himself and his suite across the Atlantic, which were granted in due course, and orders were sent to Ambassador Gerard to withdraw with all diplomatic and consular officers from Germany. Action upon Ambassador Gerard's application for his passports was delayed for some days, apparently due to rumors received in Germany that Ambassador von Bernstorff was being detained and German subjects in the United States had been interned and German vessels in American ports seized. During this period the American Ambassador was not permitted to communicate with his government in code and even his telephone was disconnected. When news reached Germany that the rumors referred to were baseless, the Ambassador was given his passports and he left Germany on Feb. 10. Subsequently it was learned that four American consuls who were assigned to Turkey upon the breach of relations with Germany were being detained there. At first it was reported that the consular officers were being held until the American Government made it possible for the German Consul, stationed until the breach of relations at Atlanta, to proceed to his new post at Ecuador. The American Government had placed no restrictions in the way of Consul Müller and it was subsequently learned that the action of the German Government was due to the unwillingness of the Turkish Government to receive the American consuls unless they would accept *exequaturs* omitting any reference to the right to sit as judges in cases involving American citizens and American property, a right enjoyed under the capitulations, but abrogated by Turkey after the outbreak of the war. As the American Government had not agreed to the abrogation of the capitulations, it was unwilling to accept *exequaturs* of the character proposed.

On Feb. 4 it was announced that the State Department had notified its diplomatic representatives in neutral countries of the breach of relations with Germany and the reasons therefor, informing them that the President "believes it will make for the peace of the world if other neutral powers can find it possible to take similar action." American diplomatic officers were instructed to "report fully and immediately on the reception of this announcement and upon the suggestion as to similar action." Practically all neutral countries sent protests against unrestricted submarine warfare but none of the European governments modified their position of neutrality as a result thereof. The action of China and the Latin American republics will be discussed later. (See *Latin America and China, infra.*)

On Feb. 10, the Swiss Minister, to whom German interests in the United States had been transferred, made a suggestion to the State Department that the German Government was willing to negotiate with the United States, provided the commercial blockade against England would not be interfered with. The Minister was asked to put the suggestion in writing and on the following day communicated it to the Department in that form, stating therein that the suggestion was made at the request of the German Government. On the day following, Feb. 12, Mr. Lansing replied and stated that he had been requested by the President to say that "the Government of the United States would gladly discuss with the German Government any questions it might propose for discussion were it to withdraw its proclamation of the 31st of January, in which, suddenly and without previous intimation of any kind, it canceled the assurances which it had given this Government on the 4th of May last, but that it does not feel that it can enter into any discussion with the German Government concerning the policy of submarine warfare against neutrals which it is now pursuing unless and until the German Government renews its assurances of the 4th of May and acts upon the assurance." The German Foreign Office later stated that these negotiations had been first suggested by the Swiss Minister and not by the German Government. The Swiss Foreign Office indicated that the Minister had not been acting under its instructions in making the proposal.

On March 1, the State Department made public the text of a note despatched on Jan. 19, 1917, by the German Minister of Foreign Affairs, Zimmermann, to the German Minister at Mexico through the German Embassy at Washington:

> On the first of February we intend to begin submarine warfare unrestricted. In spite of this, it is our intention to endeavor to keep neutral the United States of America.
>
> If this attempt is not successful, we propose an alliance on the following basis with Mexico: That we shall make war together and together make peace. We shall give general financial support and it is understood that Mexico is to reconquer the lost territory in New Mexico, Texas and Arizona. The details are left to you for settlement.
>
> You are instructed to inform the President of Mexico of the above in the greatest confidence as soon as it is certain that there will be an outbreak of war with the United States and suggest that the President of Mexico, on his own initiative, should communicate with Japan suggesting adherence at once to this plan; at the same time, offer to mediate between Germany and Japan.
>
> Please call to the attention of the President of Mexico that the employment of ruthless submarine warfare now promises to compel England to make peace in a few months.

Both Mexico and Japan denied knowledge of the subject matter of the note.

The Prussian-American Treaties.—While Ambassador Gerard was being held in Berlin awaiting his passports he was approached by a representative of the German Foreign Office with the request that he sign a proposed arrangement confirming and supplementing Article 23 of the treaty of friendship and commerce of July 11, 1799, between the United States and Prussia, dealing with the treatment of the subjects or citizens of the two states and their property in the event of war between the countries in question. The Ambassador naturally met the proposal with the statement that as he had been recalled he no longer had any authority to sign on behalf of his government and refused to take any action in regard thereto.

On Feb. 10 the Swiss Minister, acting for the German Government, renewed the proposals to the State Department. The text of the proposed agreement was as follows:

> Article 1. After the severance of diplomatic relations between Germany and the United States of America and in the event of the outbreak of war between the two powers, the citizens of either party and their private property in the territory of the other party shall be treated according to article 23 of the treaty of amity and commerce between Prussia and the United States, of the 11th of July, 1799, with the following explanatory and supplementary clauses:
>
> Article 2. German merchants in the United States and American merchants in Germany shall, so far as the treatment of their persons and their property

is concerned, be held in every respect on a par with the other persons mentioned in article 23. They shall accordingly, even after the period provided for in article 23 has elapsed, be entitled to remain and continue their profession in the country of their residence. Merchants as well as the other persons mentioned in article 23 may be excluded from fortified places or other places of military importance.

Article 3. Germans in the United States and Americans in Germany shall be free to leave the country of their residence within the time and by the routes that shall be assured to them by the proper authorities. The persons departing shall be entitled to take along their personal property, including money, valuables, and bank accounts, excepting such property the exportation of which is prohibited according to general provisions.

Article 4. The protection of Germans in the United States and of Americans in Germany and of their property shall be guaranteed in accordance with the laws existing in the countries of either party. They shall be under no other restrictions concerning the enjoyment of their private rights and the judicial enforcement of their rights than neutral residents. They may accordingly not be transferred to concentration camps, nor shall their private property be subject to sequestration or liquidation or other compulsory alienation except in cases that under the existing laws apply also to neutrals. As a general rule German property in the United States and American property in Germany shall not be subject to sequestration or liquidation, or other compulsory alienation under other conditions than neutral property.

Article 5. Patent rights or other protected rights held by Germans in the United States or Americans in Germany shall not be declared void, nor shall the exercise of such rights be impeded, nor shall such rights be transferred to others without the consent of the person entitled thereto, provided that regulations made exclusively in the interest of the State shall apply.

Article 6. Contracts made between Germans and Americans, either before or after the severance of diplomatic relations, also obligations of all kinds between Germans and Americans, shall not be declared cancelled, void, or in suspension, except under provisions applicable to neutrals. Likewise, the citizens of either party shall not be impeded in fulfilling their liabilities arising from such obligations, either by injunctions or by other provisions, unless these apply to neutrals.

Article 7. The provisions of the sixth Hague Convention, relative to the treatment of enemy merchant ships at the outbreak of hostilities, shall apply to the merchant vessels of either party and their cargo. The aforesaid ships may not be forced to leave port unless at the same time they be given a pass, recognized as binding by all the enemy sea powers, to a home port, or a port of an allied country, or to another port of the country in which the ship happens to be.

Article 8. The regulations of chapter three of the eleventh Hague Convention, relative to certain restrictions in the exercise of the right of capture in maritime war, shall apply to the captains, officers, and members of the crews of merchant ships specified in article seven, and of such merchant ships as may be captured in the course of a possible war.

Article 9. This agreement shall apply also to the colonies and other foreign possessions of either party.

On March 20 Secretary Lansing acknowledged the Swiss Minister's note and informed him that the American Government did not look with favor upon the proposal of the German Government. After reference to the sinking of American vessels carrying contraband in spite of the terms of Article 13 of the Treaty of 1799, and to the action of the German Government since the severance of diplomatic relations in preventing certain American citizens in Germany from removing freely from that country, the note concludes:

In view of the clear violations by the German authorities of the plain terms of the treaties in question, solemnly concluded on the mutual understanding that the obligations thereunder would be faithfully kept, in view further of the disregard of the canons of international courtesy and the comity of nations in the treatment of innocent American citizens in Germany, the Government of the United States can not perceive any advantage which would flow from further engagements, even though they were merely declaratory of international law, entered into with the Imperial German Government in regard to the meaning of any of the articles of these treaties, or as supplementary to them. In these circumstances, therefore, the Government of the United States declines to enter into the special protocol proposed by the Imperial Government.

I feel constrained in view of the circumstances to add that this Government is seriously considering whether or not the Treaty of 1828 and the revived articles of the treaties of 1785 and 1799 have not been in effect abrogated by the German Government's flagrant violations of their provisions, for it would be manifestly unjust and inequitable to require one party to an agreement to observe its stipulations and to permit the other party to disregard them. It would appear that the mutuality of the undertaking has been destroyed by the conduct of the German authorities.

On March 30, 1917, the Swiss Minister delivered at the State Department a communication of the German Government challenging "the assertion that it has violated the treaties of 1785, 1799 and 1828" as maintained in Secretary Lansing's note, adding that "American citizens may freely leave Germany and for the most part have already done so." That departure from Germany was delayed "under certain circumstances" was ascribed to "necessary precautionary measures."

It was maintained in the note that the U boat warfare did not contravene the treaties of 1185 and 1799, but that the United States had violated these treaties in the *Appam* case (*A. Y. B.*, 1916, pp. 76, 77). The note concluded:

> Until further notice the German Government will adhere to the maintenance of article 23 of the treaty of 1799, inasmuch as it assumes from the declarations heretofore made by the State Department that the American Government holds the same view for the present situation as well as for a possible state of war; in the same supposition it will place a liberal construction upon the article, that is to say, it will not prevent money remittances to the United States, and also, in particular, honor Imperial Treasury certificates and continue to allow Americans to depart.

Crews of Armed Merchantmen.—On Feb. 4 Ambassador Gerard cabled the State Department that as a result of an inquiry at the German Foreign Office made on Jan. 24 he had learned that 72 of the prisoners comprising the crews of vessels captured by a German commerce raider and brought to a German port on the British steamer *Yarrowdale* claimed American citizenship. These men were held as prisoners of war on the ground that when captured they were serving on British armed merchantmen, the German position being that the arming of the vessels robbed them of their ordinary merchant status. When it was learned that these men were still being held after the breach of diplomatic relations a strong protest was prepared and forwarded to the Spanish Ambassador, in charge of American interests, for presentation to the German Government. On Feb. 25 the Spanish Ambassador telegraphed that orders had been given on Feb. 16, before the arrival of the American protest, for the release of the Americans, who, however, were not actually permitted to leave Germany until March 10, due, according to the explanation of the German authorities, to a quarantine placed upon the camp in which they were interned as a result of the discovery there of a case of typhus. Four of the Americans—two veterinarians and two doctors—who were in an officers' camp located elsewhere were released on Feb. 27. Late in March it was learned that Americans were also among the crews of the vessels captured by the raider *Moewe*. Those who served upon unarmed vessels were released by the German Government but those who formed part of the crews of armed merchantmen of the belligerents were held as prisoners of war.

Attitude of Austria-Hungary.—On Jan. 31 the Austro-Hungarian Government communicated to the American Ambassador at Vienna a note announcing her purpose to "prevent by every means any navigation whatsoever within a definite closed area" similar to that indicated in the German note of the same date. All maritime traffic within these zones was to be "opposed without further ado with all weapons," and it was stated that "neutral ships which navigate these areas do so at their own risk." The reasoning that led up to this declaration followed that of the German note and Austria-Hungary thus placed herself squarely beside her ally on the question of ruthless submarine warfare.

On Feb. 14 the Secretary of State telegraphed the American Ambassador at Vienna to inquire of the Austrian Government "whether the pledge given in the cases of the vessels *Ancona* and *Persia*" (*A.Y.B.*, 1915, pp. 54-58; *A. Y. B.*, 1916, p. 55) is to be interpreted as modified or withdrawn by the declarations of the 10th of February, 1916" (in regard to treating armed merchantmen as war vessels, *A. Y. B.*, 1916, p. 57), "and the 31st of January, 1917."

On March 2 the Austro-Hungarian Government replied to the inquiry of the American Government and, after discussing the Entente methods of warfare, adding that "the central powers have hesitated more than two years" over the question of "more severe submarine warfare," stated that in the cases of the *Ancona* and

Persia the Austro-Hungarian Government had restricted itself to taking a position with "respect to the concrete questions which had arisen on those occasions without setting forth its fundamental views," reserving to itself "the right to discuss at a later date the difficult questions of international law connected with submarine warfare." It now takes up this broad question, adding that it is "guided by the wish to show the American Government that it now as hitherto firmly adheres to the assurance given by it, as well as by the endeavor to prevent misunderstandings between the monarchy and the American Union."

Proceeding from the point that "enemy merchant ships, except in cases of attempted flight or resistance, may not be destroyed without the safety of persons on board having been provided for constitutes, so to say, the kernel of the entire matter," the Austro-Hungarian Government argues that although this safety may only be provided for by warning, this warning may be not only the warning the commanding officer of the submarine issues to the vessel to be sunk but "the government of a belligerent state can, if it recognizes this as an unavoidable necessity of war, issue the warning with full effect even before the departure of the ship which is to be sunk; or, finally, it can, in setting into operation a comprehensive measure for combating the enemy's sea trade, make use of a general warning intended for all enemy ships coming under consideration."

After stating the conviction that the assurances previously given by the Austro-Hungarian Government "did not from the outset extend to armed merchant vessels since these according to existing laws, which restrict hostilities to the organized armed forces, are to be regarded as filibuster ships which are subject to summary destruction," the note adds that "the Austro-Hungarian men-of-war have instructions even in case of encountering armed enemy merchant vessels to be mindful of issuing a warning and of saving the persons on board if this should be possible under the existing circumstances." Furthermore, with reference to the zones outlined in the declaration of Jan. 31, the note states that "Austro-Hungarian men-of-war are instructed to warn merchant vessels when possible, even when encountered in these zones, as well as to provide for the safety of crews and passengers," although the Austro-Hungarian Government is "unable to accept a responsibility for the possible loss of human life which nevertheless may result from the destruction of armed ships or ships encountered in the closed zones. Moreover it may be remarked that Austro-Hungarian submarines are operating only in the Adriatic and in the Mediterranean, and that therefore a prejudicing of American interests by Austro-Hungarian men-of-war is hardly to be feared."

> In recapitulating the Imperial and Royal Government is able to state that the assurance which it gave the Washington Cabinet in the *Ancona* case and renewed in the *Persia* case has neither been withdrawn nor restricted by its declarations of Feb. 10, 1916, and Jan. 31, 1917.

Arming of American Merchantmen.—Although several Americans lost their lives on British vessels sunk during the first half of February, only two American vessels, the *Housatonic* and the *Lyman M. Law*, were the victims of submarines. Both of these latter vessels were warned and sunk without loss of life. However, American vessels—particularly passenger vessels—were unwilling to leave for European ports in view of the submarine danger and requested definite instructions from Washington. On Feb. 6 the Department of State had issued a statement to the effect that, while American vessels had a right to traverse all parts of the high seas and "a neutral merchant vessel may, if its owners believe that it is liable to be unlawfully attacked, take any necessary measures to prevent or resist such attack," "the Government cannot give advice to private persons as to whether or not their merchant vessels should . . . pass through waters delimited in the declaration issued by the German Government on Jan. 31."

American vessels found armaments and, particularly, experienced men to operate the armaments, difficult to obtain. Armament was later made available to American ships but persons capable of using it were not available outside the American Army and Navy and as a result our shipping was largely tied up in our harbors, thus bringing about a cessation of traffic with the Entente, a development from the German declaration of unrestricted submarine warfare highly advantageous to the latter country.

As a result of this situation President Wilson appeared before Congress on Feb. 26 and asked for authority to arm American merchantmen. He referred to the *Housatonic* and *Lyman M. Law* cases but stated that the situation "with regard to the actual conduct of the German submarine warfare" was substantially the same as before the declaration of Jan. 31 and the situation with reference to American ships was not materially altered except for the congestion in our ports due to the unwillingness of ship owners to risk their vessels at sea, that, in short, the "overt act" referred to in his address of Feb. 3 had not occurred.

Nevertheless in view of the possibilities of the situation and the expiration of the term of Congress by constitutional limitation on March 4, he requested the authority 'to supply our merchant ships with defensive arms, should that become necessary, and with the means of using them, and to employ *any other* instrumentalities or methods that may be necessary and adequate to protect our ships and our people in their legitimate and peaceful pursuits on the seas." He added that no doubt he already possessed this authority without special warrant of law, by the plain implication of his constitutional duties and powers, but preferred to rely upon the express authority of Congress.

The following passages from his address are significant:

> Since it has unhappily proved impossible to safeguard our neutral rights by diplomatic means against the unwarranted infringements they are suffering at the hands of Germany, there may be no recourse but to armed neutrality, which we shall know how to maintain and for which there is abundant American precedent. . . .
>
> I am not now proposing and contemplating war or any steps that need lead to it. I merely request that you will accord me by your own vote and definite bestowal the means and the authority to safeguard in practice the right of a great people, who are at peace and who are desirous of exercising none but the rights of peace, to follow the pursuit of peace in quietness and good-will rights recognized time out of mind by all the civilized nations of the world. No course of my choosing or of theirs will lead to war. War can come only by the wilful acts and aggressions of others.

A bill giving the President the desired authority was introduced into Congress and passed by the House by 403 to 13, with the "other instrumentalities" desired by the President (in addition to arming) omitted. Through a filibuster of a small minority, action on the bill before the constitutional date of adjournment was prevented in the Senate, although it was evident that the great majority of the Senators were in favor of its passage.

After consulting with the Cabinet and particularly the Attorney General the President decided that he had a right to proceed in the matter without the specific authorization of Congress, and on March 12 the State Department announced that "the Government of the United States has determined to place upon all American merchant vessels sailing through the barred areas an armed guard for the protection of the vessels and the lives of the persons on board." Inquiry was made of the neutral countries as to whether any obstacle existed to the entry of armed merchantmen into their ports. In general there was found to be none except in the case of Holland, which by royal decree of Aug. 30, 1914, had excluded armed vessels from her ports.

Belgian Relief.—On March 24 the State Department announced that "by direction of the President the Minister at Brussels has been instructed to withdraw from Belgium with all diplomatic and consular officers and take up his official residence at Havre," the seat of the Belgian Government, and that "after consultation with the Commission for Relief in Belgium, Mr. Whitlock has also been instructed to arrange for the departure of the American members of the Commission."

The following explanation of the

reason for this action was made in the statement:

> When diplomatic relations with Germany were broken off the normal procedure would have been to withdraw the Minister at Brussels and the members of the Relief Commission. Both this Government and the Commission felt a heavy moral responsibility for the millions of innocent civilians behind the German lines, and it was decided that the work of the Commission must be kept going, despite all difficulties, until continued American participation became impossible.
>
> For over two years it has been the single-minded purpose of this Government and the Commission to see that these ten millions of civilians were fed, and, with this end in view, the Americans concerned have submitted to restrictions forced on them by the German authorities which, under ordinary conditions, would never have been tolerated.
>
> Immediately after the break in relations the German authorities in Brussels withdrew from Mr. Whitlock the diplomatic privileges and immunities which he had up to that time enjoyed. His courier service to The Hague was stopped. He was denied the privilege of communicating with the Department of State in cipher, and later even in plain language. The members of the Relief Commission were placed under great restrictions of movements and communications, which hampered the efficient performance of their task.
>
> In spite of all these difficulties, the Government and the Commission were determined to keep the work going till the last possible moment. Now, however, a more serious difficulty has arisen. In the course of the last 10 days several of the Commission's ships have been attacked without warning by German submarines, in flagrant violation of the solemn engagements of the German Government. Protests addressed by this Government to Berlin through the intermediary of the Spanish Government have not been answered.
>
> The German Government's disregard of its written undertakings causes grave concern as to the future of the relief work. In any event, it is felt that the American staff of the Commission can no longer serve with advantage in Belgium. Although a verbal promise has been made that the members of the Commission would be permited to leave if they desire, the German Government's observance of its other undertakings has not been such that the department would feel warranted in accepting responsibility for leaving these American citizens in German occupied territory.
>
> This Government has approved the proposals of the Netherlands Government to send into Belgium a certain number of Netherlands subjects to carry on the work thus far performed by the American staff.

No obstacle was placed by the German Government in the way of the departure of American diplomatic and consular officers from Belgium nor of the Americans with the Commission except that it was arranged that the latter should remain in Germany for two weeks en route to Switzerland in view of their presence in a German military zone while performing their duties in Belgium.

Declaration of the Existence of a State of War.—During the period from Feb. 26, when the President addressed Congress on the subject of arming merchantmen, and April 2, six American vessels were torpedoed—in most cases without warning—and in the cases of the *Vigilancia*, the *Healdron* and the *Aztec* with the loss of American lives. Hospital and Belgian relief ships met a similar fate and on April 2 the President appeared before a specially convened session of Congress, laid before them the situation, and recommended that "Congress declare the recent course of the Imperial German Government to be in fact nothing less than war against the Government and people of the United States; that it formally accept the status of belligerent which has thus been thrust upon it and that it take immediate steps not only to put the country in a more thorough state of defense, but also to exert all its power and employ all its resources to bring the Government of the German Empire to terms and end the war."

Armed neutrality was characterized as "impracticable" and "ineffectual enough at best." Submarines "must be dealt with at sight, if dealt with at all."

As to the allies of Germany the President added:

> I have said nothing of the Governments allied with the Imperial Government of Germany because they have not made war upon us or challenged us to defend our rights and our honor. The Austro-Hungarian Government has, indeed, avowed its unqualified indorsement and acceptance of the reckless and lawless submarine warfare adopted now without disguise by the Imperial Government, and it has therefore not been possible for this Government to receive Count Tarnowski, the Ambassador recently accredited to this Government by the Imperial and Royal Government of Austria-Hungary; but that Government has not actually engaged in warfare against citizens of the United States on the seas, and I take the liberty, for the present at least, of postponing a discus-

sion of our relations with the authorities at Vienna. We enter this war only where we are clearly forced into it because there are no other means of defending its rights.

The following passages from the President's address are significant:

> Neutrality is no longer feasible or desirable where the peace of the world is involved and the freedom of its peoples, and the menace to that peace and freedom lies in the existence of autocratic governments backed by organized force which is controlled wholly by their will, not by the will of their people. We have seen the last of neutrality in such circumstances. . . .
>
> We have no quarrel with the German people. We have no feeling toward them but one of sympathy and friendship. It was not upon their impulse that their Government acted in entering this war. It was not with their previous knowledge or approval.
>
> The world must be made safe for democracy. Its peace must be planted upon the trusted foundations of political liberty.
>
> We have no selfish ends to serve. We desire no conquest, no dominion. We seek no indemnities for ourselves, no material compensation for the sacrifices we shall freely make. We are but one of the champions of the rights of mankind.
>
> But the right is more precious than peace, and we shall fight for the things which we have always carried nearest our hearts—for democracy, for the right of those who submit to authority to have a voice in their own governments, for the rights and liberties of small nations, for a universal dominion of right by such a concert of free people as shall bring peace and safety to all nations and make the world itself at last free.

Congress acted promptly upon the President's suggestion and the resolution declaring the existence of a state of war with Germany was passed on April 5 and the state of war proclaimed by the President on the following day.

On April 8 the Austro-Hungarian Government broke diplomatic relations with the United States in view of the American declaration of a state of war with Germany and similar action was taken on April 20 by Turkey. Diplomatic relations with Bulgaria, however, continued uninterrupted.

One of the first acts after the declaration of war was to take over the control of the German merchant vessels in American ports, most of which had previously been damaged by their officers and crew. Similar control of Austrian vessels in our ports was assumed after the Austro-Hungarian breach of relations. On May 10 Congress authorized the seizure and use of German vessels in the ports of the United States and its overseas colonies, except the Virgin Islands. The question of compensation to the owners after the war was not passed upon.

In order to place at the disposition of the American Government the result of the experience gained during nearly three years of warfare, and to establish efficacious economic and military coöperation in the prosecution of the war, a British commission headed by Mr. Balfour, British Secretary of State for Foreign Affairs, and a French commission headed by Vice Premier Viviani, and including Marshal Joffre, late commander-in-chief of the French army, left for the United States. Shortly after the American declaration of war, Italian, Belgian, Russian, Roumanian and Japanese commissions followed. (For the American commission to Russia see *Russia*, *infra.*) Billions of dollars were loaned by the United States Government to the Allies during the remainder of the year to aid them in the vigorous prosecution of the war.

On April 27 the British Government by proclamation removed the names of all persons and firms in the United States, Porto Rico and the Philippines from the British statutory blacklist (*A. Y. B.*, 1916, pp. 68-70), and similar action was taken by France and such other of the Allies as had promulgated blacklists of firms in the United States. On Oct. 31 it was announced that after several months of negotiations the British Government had agreed that no difficulties would be placed in the way of the shipment to the United States of goods of German and Austrian origin (*A. Y. B.*, 1916, pp. 65-66) which had arrived at a neutral European port and had been paid for prior to the entry of the United States into the war. It was estimated that goods to the value of more than a million and a quarter dollars were affected.

The control of exports instituted by presidential proclamation in conformity with the authority conferred by the Espionage bill approved June 15 particularly affected the Scandinavian countries, Holland, and Switzerland, in view of the steps taken by the Exports Council (later the Exports Administrative Board and the War Trade Board) to prevent, if possible, all direct or indirect trade with Germany. Before supplies were permitted to go forward to these neutral countries full data was requested as to the imports and exports, domestic production and needs of these countries, all of which dispatched commissions to the United States. Negotiations lasting through months were entered into between these commissions and the United States Food Commission and the export control boards. On Dec. 5 it was announced that an agreement for the provisioning of Switzerland, approved by the Inter-Allied Council and entirely satisfactory to Switzerland, was signed at Paris by the Chairman of the United States War Trade Board and the delegates of the Swiss Government. On the same day it was reported that the American Minister at Berne delivered a note to the Swiss Federal Council to the effect that the United States formally recognizes Swiss neutrality and declares itself in complete agreement with the Allies on the subject of respecting Swiss neutrality and the inviolability of Swiss territory, so long as the confederation maintains neutrality and that neutrality is respected by the enemy.

The representatives of the United States Government at the Inter-Allied Conference which met at Paris from Nov. 29 to Dec. 3 for the purpose of discussing closer unity among the Allies in the prosecution of the war and the coördination of their resources, included Colonel House, who headed the delegation as the representative of the President, General Bliss, Chief of Staff, Admiral Benson, Assistant Secretary of the Treasury Crosby, and Vance McCormick, Chairman of the War Trade Board. Practically all the countries at war with Germany were represented at the conference. Colonel House and General Bliss also represented the United States at the meeting of the Supreme War Council, participated in by Great Britain, France, Italy, and the United States, which met on Dec. 1 and dealt with military operations on the western front, which latter term had been broadened to include the Italian front.

War with Austria.—On Dec. 4, the President addressed Congress which had assembled on the previous day. The following excerpts from his address, which dealt entirely with the war, are noteworthy:

> I believe that I speak for them when I say two things: First, that this intolerable Thing of which the masters of Germany have shown us the ugly face, this menace of combined intrigue and force which we now see so clearly as the German power, a Thing without conscience or honour or capacity for covenanted peace, must be crushed and, if it be not utterly brought to an end, at least shut out from the friendly intercourse of the nations; and, second, that when this Thing and its power are indeed defeated and the time comes that we can discuss peace—when the German people have spokesmen whose word we can believe and when those spokesmen are ready in the name of their people to accept the common judgment of the nations as to what shall henceforth be the bases of law and of covenant for the life of the world,—we shall be willing and glad to pay the full price for peace, and pay it ungrudgingly. We know what that price will be. It will be full, impartial justice,—justice done at every point and to every nation that the final settlement must affect, our enemies as well as our friends.
>
> You catch, with me, the voices of humanity that are in the air. They grow daily more audible, more articulate, more persuasive, and they come from the hearts of men everywhere. They insist that the war shall not end in vindictive action of any kind; that no nation or people shall be robbed or punished because the irresponsible rulers of a single country have themselves done deep and abominable wrong. It is this thought that has been expressed in the formula 'No annexations, no contributions, no punitive indemnities.' Just because this crude formula expresses the instinctive judgment as to right of plain men everywhere it has been made diligent use of by the masters of German intrigue to lead the people of Russia astray—and the people of every other country their agents could reach, in order that a premature peace might be brought about before autocracy has been taught its final and convincing lesson, and the people of the world put in control of their own destinies.
>
> But the fact that a wrong use has been made of a just idea is no reason why a right use should not be made of it. It ought to be brought under the patronage of its real friends. Let it be said again that autocracy must first be shown the

utter futility of its claims to power or leadership in the modern world. It is impossible to apply any standard of justice so long as such forces are unchecked and undefeated as the present masters of Germany command. Not until that has been done can Right be set up as arbiter and peace-maker among the nations. But when that has been done,—as, God willing, it assuredly will be,—we shall at last be free to do an unprecedented thing, and this is the time to avow our purpose to do it. We shall be free to base peace on generosity and justice, to the exclusion of all selfish claims to advantage even on the part of the victors. . . .

. . . The peace we make must. . . . deliver the once fair lands and happy peoples of Belgium and northern France from the Prussian conquest and the Prussian menace, but it must also deliver the peoples of Austria-Hungary, the peoples of the Balkans, and the peoples of Turkey, alike in Europe and in Asia, from the impudent and alien dominion of the Prussian military and commercial autocracy.

We owe it, however, to ourselves to say that we do not wish in any way to impair or to rearrange the Austro-Hungarian Empire. It is no affair of ours what they do with their own life, either industrially or politically. We do not purpose or desire to dictate to them in any way. We only desire to see that their affairs are left in their own hands, in all matters, great or small. We shall hope to secure for the peoples of the Balkan peninsula and for the people of the Turkish Empire the right and opportunity to make their own lives safe, their own fortunes secure against oppression or injustice and from the dictation of foreign courts or parties.

And our attitude and purpose with regard to Germany herself are of a like kind. . . .

No one is threatening the existence or the independence or the peaceful enterprise of the German Empire.

The worst that can happen to the detriment of the German people is this, that if they should still, after the war is over, continue to be obliged to live under ambitious and intriguing masters interested to disturb the peace of the world, men or classes of men whom the other peoples of the world could not trust, it might be impossible to admit them to the partnership of nations which must henceforth guarantee the world's peace. That partnership must be a partnership of peoples, not a mere partnership of governments. It might be impossible, also, in such untoward circumstances, to admit Germany to the free economic intercourse which must inevitably spring out of the other partnerships of a real peace. But there would be no aggression in that; and such a situation, inevitable because of distrust, would in the very nature of things, sooner or later cure itself, by processes which would assuredly set in.

The wrongs, the very deep wrongs, committed in this war will have to be righted. That of course. But they cannot and must not be righted by the commission of similar wrongs against Germany and her Allies. The world will not permit the commission of similar wrongs as a means of reparation and settlement.

When I said in January that the nations of the world were entitled not only to free pathways upon the sea, but also to assured and unmolested access to those pathways I was thinking, and I am thinking now, not of the smaller and weaker nations alone, which need our countenance and support, but also of the great and powerful nations, and of our present enemies as well as our present associates in the war. I was thinking, and am thinking now, of Austria herself, among the rest, as well as of Serbia and of Poland.

One very embarrassing obstacle that stands in our way is that we are at war with Germany but not with her allies. I therefore very earnestly recommend that the Congress immediately declare the United States in a state of war with Austria-Hungary. Does it seem strange to you that this should be the conclusion of the argument I have just addressed to you? It is not. It is in fact the inevitable logic of what I have said. Austria-Hungary is for the time being not her own mistress but simply the vassal of the German Government. We must face the facts as they are and act upon them without sentiment in this stern business. The government of Austria-Hungary is not acting upon its own initiative or in response to the wishes and feelings of its own peoples but as the instrument of another nation. We must meet its force with our own and regard the Central Powers as but one. The war can be successfully conducted in no other way. The same logic would lead also to a declaration or war against Turkey and Bulgaria. They also are the tools of Germany. But they are mere tools and do not yet stand in the direct path of our necessary action. We shall go wherever the necessities of this war carry us, but it seems to me that we should go only where immediate and practical considerations lead us and not heed any others.

Congress promptly acted upon the President's recommendation and a resolution stating that the "Austro-Hungarian Government had committed repeated acts of war against the Government and the people of the United States" and declaring the existence of a state of war between the Governments of the United States and Austrio-Hungary, passed the House of Representatives with but one dissenting vote and was adopted unanimously by the Senate and approved by the President on Dec. 7.

Japanese Protests.—Early in February the Japanese Ambassador made representations to the State Department with reference to the bills pending in the legislatures, Idaho and Oregon to prohibit th ownership of land in these states b Japanese. As a result of represe tions from the State Department o the effect that the passage of th acts would greatly embarrass t Government, particularly in vie of the critical state of relations ith Germany at the time, the me ures in question were dropped. T Japanese Ambassador also protested against the portion of the Immigration bill, passed by Congress on Feb. 5, over the President's veto, which prohibited the entry into the United States, unless otherwise provided for by existing treaties, of natives of islands not owned by the United States adjacent to the coast of Asia, within certain parallels of latitude and longitude drawn so as to embrace Japan. (See *A. Y. B.*, 1916, pp. 13, 14; and *American History, infra.*)

IN ERNATIONAL RELATIONS OF LATIN AMERICA

MEXICO

Relatior with United States.—In spite of eneral Carranza's refusal to ratify he protocol agreed to by the Mexi an and American commissioners f r the withdrawal of the American troops from Mexico (*A. Y. B* 1916, pp. 84-85) and the subseque dissolution of the Joint Commiss n on Jan. 15, announcement wa made on Jan. 28 by Secretary Bal r that orders had been issued to General Pershing for the withdraw l of American troops from Mexico. A few days later it was decided to send Ambassador Fletcher (*A. Y. B.* 1916, p. 79) to Mexico. By Feb. 5, t e date of the promulgation of the new Mexican constitution, American troops had left Mexican soil and n Feb. 10 Mr. Fletcher left for Mexi o City. Several days later it was announced that Ignacio Bonillas, form er Minister of Communications an a member of the Joint Commission, had been designated as Mexican Ambassador to the United States. Elections under the new constitution for a President and Congress were held on March 11 and General Carranza was chosen for the former office by an overwhelming majority. The inauguration of the new President was set for May 1.

In receiving Ambassador Bonillas on Apri 17 President Wilson said:

> I take note of your statement that constitutional order will be reëstablished in Mexico on May 1. I shall welcome the day that brings me convincing evidence that a constitutional government has been established in Mexico both willing and able to afford to American citizens an their property the same measure of protection and to apply to them the sa he impartial administration of justice that is afforded and is applied to both Mexico and the citizens or subjects of other foreign countries. The United States asks no more, and can, of course, accept no less.

In view of the improvement in conditions in Mexico the Department of State announced on July 20 that the United States had agreed to release to the Mexican Government 2,700,000 rounds of ammunition belonging to the Government of Mexico which had been held at the border for more than a year and a half as a result of the American embargo on the shipment of arms and munitions into Mexico.

Neutrality in the War.—On Feb. 11 the Government of Mexico addressed a note to each of the countries still neutral in the European war, including the United States, proposing in an effort "toward bringing about the earliest possible termination of the European war, or at least so circumscribing it as to remove the possibility of future complications and thus bringing into sight an early ending," that "the groups of contending powers be invited, in common accord and on the basis of absolutely perfect equality on either side, to bring this war to an end, either by their own effort or by availing themselves of the good offices of friendly mediation of all the countries which would jointly extend that invitation. If within a reasonable term peace could not be restored by this means, the neutral countries would then take the necessary measures to reduce the conflagration to its narrowest limit by refusing any kind of implements to the belligerents and suspending commercial relations with the warring nations until the said conflagration shall have been smothered."

> The Mexican Government is not unconscious of its somewhat departing from the principles of international law which have heretofore regulated the relations between neutrals and belligerents when it offers its propositions; but it must be admitted that the present war is a conflict without a precedent in the history of mankind that demands supreme efforts and novel remedies that are not to be found among the narrow and somewhat selfish rules of international law as accepted until now. Mexico believes that, confronted by a catastrophe of such large proportions the like of which never was seen, by a war in which political, social, military, and economic factors that could never be foreseen have been brought into play, it can not go astray in proposing that the remedies to be applied to the conflict be also new, extraordinary, and commensurate with the circumstances.
>
> The Government of Mexico understands that no neutral nation, no matter how mighty, could singly take a step of this character, and that the measure can only be brought to a successful issue through the coöperation of the neutral governments wielding the greatest international influence with the belligerent nations.
>
> It is specially incumbent on the United States, Argentina, Brazil, and Chile in America; Spain, Sweden, and Norway in Europe, as being more influential and freer to arrive at a decision toward the belligerents, to father an initiative which is none the less worthy of thorough study and earnest consideration than for its coming from a nation which is supposed to be weakened at present and therefore incapable of any effective international effort.
>
> The Government of Mexico cherishes the hope that if this idea is accepted and put into practice it may serve as a precedent and basis for a new shaping of international law that would give neutrals the opportunity to assist in preventing and mending future international wars while most strictly respecting the sovereignty of the belligerents.

In its reply, dated March 16, the American Government expressed its regret at its inability to accept the proposal of the Mexican Government and referred to the futile peace efforts of President Wilson, the recent activities of the German Government and the position taken by the Government of the United States in reply to the Austro-Hungarian note of Aug. 12, 1915 (*A. Y. B.*, 1915, p. 7), with reference to the shipment of munitions of war to the belligerents.

The note concluded:

> The President would not be understood, however, as desiring to impede the progress of a movement leading to the resumption of peaceful relations between all of the belligerents, and would not, therefore, wish the Mexican Government to feel that his inability to act in the present stage of affairs should in any way militate against the attainment of the high ideals of General Carranza by the coöperation of other neutral Governments in the use of their good offices and friendly mediation to bring about the end of the terrible war which is being waged between the great powers of Europe.

The Mexican proposal met with little response and General Carranza reaffirmed the neutrality of Mexico upon the entry of the United States into the conflict and again in his message at the opening of the regular session of the Mexican Congress on September 1.

WEST INDIES

Cuban Revolutionary Activity.—In order to enforce their claims of success in the closed contested Presidential election of Nov. 1, 1916 (*A. Y. B.*, 1916, p. 110), certain elements of the Liberal party in Cuba began in February revolutionary activity in Oriente Province and seized the Government of Santiago in the hope of either gaining the presidency or forcing American intervention. The Government of the United States immediately expressed its concern at the reports of revolutionary activity, adding its confident hope that all disputes would be settled by constitutional means. As this appeal brought no abatement of the activity of the revolutionists, the American Government some days later indicated to the rebels its firm intention to stand by the constituted government in its efforts to suppress revolution and to hold the rebels strictly accountable for all damages to the persons or property of foreigners. Marines were landed at Guantanamo, Santiago and other ports for the protection of American property, including the sugar estates in the vicinity which were menaced by the revolutionists. The government forces gradually obtained control and as they did so the American marines were withdrawn.

Cuban Declaration of War.—On April 6 President Menocal appeared before the Cuban Congress and after outlining the various steps of the American Government *vis à vis* Germany proposed the passage of a resolution to be presented authorizing him "to adopt all measures necessary to maintain and defend Cuban territory, provide for the security of its inhabitants and coöperate with the United States of America and the other allied nations, lending every assistance, for the defense of the liberty of the seas, of the rights of neutrals and of international justice."

The following passage from the President's address is noteworthy:

> Cuba cannot appear indifferent to such violations, which at any moment may be carried out at the cost of the lives and the interests of its own citizens. Nor can it without loss of dignity and decorum show indifference to the noble attitude assumed by the United States, to which we are bound by ties of gratitude and by treaties. Cuba cannot remain neutral in this supreme conflict, because a declaration of neutrality would compel it to treat alike all belligerents, denying them with equal vigor access to our ports and imposing other restrictions which are contrary to the sentiment of the Cuban people, and which inevitably in the end would result in conflict with our friend and ally.

The resolution declaring war on Germany was promptly and unanimously passed on April 7 by both houses of Congress and an existence of the state of warfare promptly proclaimed by the President on May 8. As a result of elections held in Oriente Province on April 2, the Nov. 1 elections in that province having been in doubt, the Congress proclaimed General Menocal reëlected to the presidency. On May 16 the American Government made a statement to the effect that in view of the association of Cuba with the United States in the war and the need for full military and economic coöperation between the two countries, it might become necessary to regard those persons still opposing the Menocal Government as enemies and to deal with them accordingly, if they still persisted in their attitude. On Aug. 21, by Presidential decree, the Cuban Government turned over to the Government of the United States without compensation to be used in the successful prosecution of the war, four German steamships seized in Cuban ports after the declaration of war by the Cuban Government. On Oct. 6 it was announced that President Menocal, in order to coöperate with the United States in its export control, had by decree prohibited the exportation from Cuba, except under licenses, of all articles included in President Wilson's proclamations prohibiting the exportation of certain goods from the United States.

HAITI AND THE DOMINICAN REPUBLIC

Early in May President d'Artiguenave sent a message to the Haitian National Assembly recommending a declaration of war against Germany in consequence of the death of eight Haitians who lost their lives when the French steamship *Montreal* was torpedoed. The Haitian legislature did not declare war but unanimously adopted a report authorizing the President to protest in the name of humanity against the German submarine warfare, to hold the German Government responsible for the interests and lives of Haitian citizens on the high seas, to demand, upon occasion, guarantees and reparation, to assume a benevolent policy toward the United States, and, if necessity arises, to break off diplomatic relations with Germany. The rupture of diplomatic relations between Haiti and the German Empire was announced on June 18.

The military occupation of the Dominican Republic (*A. Y. B.*, 1916, p. 87) continued during the year. On June 18 it was announced that Admiral Knapp, commanding the American forces in the Dominican Republic, had canceled the *exequaturs* of the German consular officers in that country.

CENTRAL AMERICA

Revolution in Costa Rica.—On Jan. 28 it was announced that by a bloodless *coup d'état* Federico Tinoco, Minister of War in President Gonzalez's Cabinet, had overthrown the Government and taken over the executive power. Costa Rica had been free from revolutionary activity for nearly 40 years and the cause of Tinoco's action was stated to be the reported aim of the President to provide for his reëlection, in spite of the prohibition contained in the Constitution of Costa Rica, and the proposal of a new system of taxation by the President. Asylum was granted President Gonzalez in the American Legation and, in accordance with its policy of non-recognition of governments set up in Latin America as a result of revolutionary activity the Government of the United States announced that recognition would not be accorded to the Government of Tinoco. On Feb. 22 the American Government made public in Central America an announcement that it would not regard claims arising from financial support to or business transactions with the revolutionary government in Costa Rica worthy of its diplomatic support. Immediately after the *coup d'état* the Tinoco Government took steps to call a convention composed of delegates to be elected by the people, to meet on April 1, to proceed with the election of a President. Tinoco received 70 per cent. of the total vote in the convention and on April 1 was declared to be elected President of the Republic.

Attitude Toward the War.—Panama promptly endorsed the stand of the United States in breaking off diplomatic relations with Germany and upon receiving notice of the declaration of war by the United States the Panamanian President endorsed the action of this country, canceled the *exequaturs* of German consuls in Panama and issued the following proclamation:

> Our indisputable duty in this tremendous hour of history is of a common ally, whose interests and existence as well are linked indissolubly with the United States. As the situation creates dangers for our country it is the duty of the Panamanian people to coöperate with all the energies and resources they can command for the protection of the canal and to safeguard national territory.
>
> The attitude of the people was foreseen and interpreted faithfully in a resolution unanimously approved by the National Assembly on Feb. 24, and confirmed by later laws, and the moment has arrived for the Executive to act in accordance with the declarations of the supreme body. I therefore declare that the Panamanian Nation will lend emphatic coöperation to the United States against enemies who execute or attempt to execute hostile acts against the territory of the canal, or in any manner affect or tend to affect the common interests.
>
> The Government will adopt adequate measures in accordance with the circumstances. I consider it the patriotic duty of all Panamanian citizens to facilitate the military operations which the forces of the United States undertake within the limits of our country. Foreigners, resident or transient, will be obliged to submit to the conditions of this declaration.

The Panamanian Government indicated that it regarded this action of the President, which was subsequently ratified by the National Assembly, as equivalent to a declaration of war (April 7).

On April 12 it was announced that the representative of the Tinoco Government in Costa Rica had informed the American Government of its support of the attitude of the Government of the United States toward Germany and of its desire to demonstrate its solidarity with this Government by permitting the use of Costa Rican ports and waters by the American Navy in connection with the prosecution of the war. Although this action was followed on Sept. 21 by a rupture of diplomatic relations with Germany, the United States maintained its attitude of non-recognition of the Tinoco Government.

On April 28 Guatemala severed diplomatic relations with Germany. In informing the Secretary of State of the United States of this action the Guatemalan Minister stated that his country desired to stand with the United States in its fight for democracy and the preservation of international law and offered the United States the use of Guatemalan territorial waters, ports and railways "for the use in the common defense, as also all elements which may be available" for the same purpose.

The Government of Nicaragua on April 18 expressed to the United States its sympathy with the United States and approval of the American declaration of war. This was followed on May 19 by a severance of diplomatic relations with Germany. On May 17 Honduras announced that relations with Germany had been severed and Honduras took her place by the side of the United States. Salvador, alone of the Central American republics, did not modify her attitude as a result of the entry of the United States into the war.

Proposals of a Central American Union.—Following the action of Nicaragua in denouncing the Washington Convention of 1907 providing for the Central American Court of Justice after the decisions of the latter court in the matter of the American-Nicaraguan treaty (*A. Y. B.*, 1916, pp. 85, 86), Costa Rica extended an invitation to the five Central American republics that were party to the agreement to meet in the fall of 1917 at San José for the revision of the convention which terminated in Dec., 1917. To this invitation Honduras replied suggesting that the scope of the convention be extended to include the consideration of the plan discussed when the convention was framed to unite the five Central American republics into a single state. It is understood that Salvador has indicated her willingness under certain conditions to participate in a conference to consider the Costa Rican and Honduran proposals but no further progress in the matter has been announced.

BRAZIL

Relations with Germany.—On Feb. 9 and 13 the Brazilian Government protested to Germany against the inauguration of unrestricted submarine warfare and stated that the German Government would be held responsible to Brazil for all the consequences thereof and that a submarine attack upon any Brazilian boat would result in an immediate breach of diplomatic and commercial relations between the two countries. On April 4 the Brazilian ship *Paraná* was sunk apparently without warning and on April 10 the Minister of Foreign Affairs announced that in accordance with the policy set out in its note of protest the Government had severed diplomatic relations with Germany. Several days later the Brazilian Government took over the control of the 46 German merchant vessels in Brazilian ports. On April 28 the Government of Brazil issued a proclamation of neutrality with respect to the war between Germany and the United States.

On May 3 the Brazilian Congress convened and on May 22 the President in a message to it recommended the revocation of the decree of neutrality of April 28 as an evidence of solidarity between Brazil and the United States. Meanwhile reports of the sinking of the Brazilian steamship *Tijuca* were received and on May 26 the President recommended that Congress authorize the utilization of the German merchantmen interned in Brazilian ports in accordance with the provisions of the Hague Convention, leaving open the question of compensation until it was determined whether or not the enterprises to which they belonged were wholly of a private character or had some connection with the German Government. The Chamber of Deputies on May 29 unanimously passed a resolution authorizing the President to withdraw the neutrality decree of April 25, to utilize the German ships in Brazilian ports, to adopt measures for the protection of Brazilian shipping abroad and to come to an agreement with friendly nations respecting measures which would insure the liberty of Brazil's import and export trade. Similar action was taken by the Senate on June 1 and the resolution was signed by the President and put in force on the same day. In notifying the Secretary of State of the United States of this action the Brazilian Ambassador, acting in accordance with the instructions of the President of the Republic, said:

> While the comparative lack of reciprocity on the part of the American Republics divested until now the Monroe doctrine of its true character, by permitting of an interpretation based on the prerogatives of their sovereignty, the present events which brought Brazil even now to the side of the United States at a critical moment in the history of the world, are still imparting to our foreign policy a practical shape of continental solidarity, a policy, however, that was also that of the former *régime* whenever any of the other sister friendly nations of the American Continent was concerned.

To the German Government's protest against the requisition and utilization of the German merchant vessels, the Brazilian Government replied:

> The utilization of German ships by Brazil follows the torpedoing of Brazilian merchant ships and assures, directly and immediately, although by force, satisfaction for the losses caused by German submarines. Brazil is acting

lawfully and on the basis of even German law. It has taken a step which all nations take, even without abandoning its state of peace, for the sole reason of forcing an offending nation to make due reparation.

In accordance with the authorization contained in the resolution passed by the Brazilian Congress on June 1 the President entered into negotiations with Great Britain in regard to the restrictions imposed by the latter on the entry of Brazilian coffee into the United Kingdom. Great Britain indicated her willingness to modify her restrictions so as to permit the entry of Brazilian coffee transported under certain conditions and on June 29 by executive decree, the decree of neutrality of Aug. 4, 1914, with reference to the war between Great Britain and her allies and Germany was withdrawn. American and Entente warships alike were now free to enter Brazilian ports and an American fleet that visited Rio de Janeiro was enthusiastically received. Brazilian warships also coöperated with the American fleet in patrolling the South Atlantic.

On Oct. 25 President Braz sent a message to Congress stating that Germany had practically imposed a state of warfare on Brazil, and recommended that Congress take note of the fact by authorizing the declaration of the existence of a state of war. This action was taken by Congress on the following day, by a vote of 149 to one in the Chamber of Deputies and a unanimous vote in the Senate, and the state of war proclaimed by the President on Oct. 27. An exchange of telegrams between the President of the United States and of Brazil after the declaration of war emphasized the solidarity between the two countries.

ARGENTINA

Relations with Germany.—On Feb. 7 the Argentine Government expressed to the German Minister its regret at the extreme measures adopted by Germany in its submarine warfare and added that Argentina would conform its conduct, as always, to the principles and rules of international law. Shortly thereafter it was reported that the Argentine Government had approached the other Latin American republics with a proposal for a meeting to discuss the war and agree upon common action with reference thereto. Not all the Latin American states looked with favor upon the proposal and nothing resulted therefrom.

On April 4 the Argentine sailing vessel *Monte Protegido* was sunk, and on April 11 the Argentine Government notified the United States that it recognized the justness of the decision of the United States Government in declaring war upon Germany. It having been determined to the satisfaction of the Argentine Government that a German submarine was responsible for the torpedoing of the *Monte Protegido*, a demand was made upon the German Government for complete satisfaction and on May 2 it was stated that a reply offering reparation had been received from Berlin. On May 4 it was announced that after an examination by the Council of Minister the German reply was accepted as satisfactory and the incident closed.

As a result of the subsequent torpedoing of the Argentine vessels *Oriana* and *Toro*, the Argentine Government on July 4 again protested to Germany, demanding indemnity, satisfaction and assurances that no more Argentine vessels would be attacked. After several interchanges of notes the German Government late in August finally agreed to the demands of the Argentine Government and the latter announced on Aug. 30 that the incident was regarded as closed. The American fleet under Admiral Caperton which visited Buenos Aires late in August was permitted to enter Argentine waters without restrictions and was welcomed by Argentine officials.

On Sept. 8 the American Secretary of State made public the text of cablegrams dated May 19, July 3 and July 9 from Count von Luxburg, the German *Chargé d'Affaires* at Buenos Aires, to the Foreign Office at Berlin, dispatched from Buenos Aires by the Swedish Legation, as its own official messages, addressed to the Swedish Foreign Office. These cablegrams referred to the pending controversy between Germany and Argentina, characterized the Acting Argentine Minister of Foreign Affairs as a "notorious ass and anglophile," and recommended that Argentine vessels be either spared or sunk without a trace (*spurlos versenkt*). Anti-German demonstrations took place in Argentina, passports were promptly handed to Count von Luxburg, who was informed that he had ceased to be *persona grata* to the Argentine Government and the Argentine Minister at Berlin was instructed to demand an explanation from the German Foreign Office. Apparently the statement of the Swedish Government that the telegrams were sent in German code and that therefore their contents were not known to the Swedish Government was accepted by the Argentine Government and the Swedish Minister, Baron Lowen, remained at his post until Dec. 2, when it was announced that he left Buenos Aires and sailed for home without making the customary farewell visits. Hjalmar Branting, Minister of Finance in the reorganized Swedish Cabinet, stated in his paper in September that Baron Lowen had been removed. An undersecretary of the German Foreign Office gave verbal assurances that the expressions contained in the cablegrams were not approved by the German Government, which regretted the action of its diplomatic representative. These verbal assurances were, however, regarded as insufficient and on Sept. 19 by a vote of 23 to one the Argentine Senate declared in favor of breaking off diplomatic relations with Germany. Action was postponed in the Chamber of Deputies at the request of the Minister of Foreign Affairs, and in the meanwhile formal written assurances of disapproval of Count von Luxburg's action were handed to the Argentine Minister at Berlin, and the information communicated to Buenos Aires. Nevertheless, on Sept. 25 the Chamber of Deputies voted for a severance of relations by 53 to 18. President Irigoyen, however, withheld his approval of the resolution of the Argentine Legislature, it being stated that before taking action he was awaiting the text of a number of other telegrams sent by Count von Luxburg through Swedish official channels which were being forwarded by the Argentine Ambassador at Washington. It was also stated in the press that President Irigoyen was endeavoring to arrange for concerted action of all the Latin American republics before severing relations.

On Oct. 11 it was reported that Count von Luxburg had been arrested in the southern part of Buenos Aires province and was being taken to a German detention camp where he would be placed under military guard until an opportunity was found to send him out of the country. It was stated in the press on Oct. 29 that the British and French Governments had granted a safe conduct to Count von Luxburg, Argentina having requested the American Government to obtain the safe-conduct from the Allies.

URUGUAY

Attitude in the War.—Upon notice from Germany of unrestricted submarine warfare, Uruguay protested and informed the United States that it adhered to the principle enunciated by the United States Government in breaking off diplomatic relations with Germany. At the outbreak of the war between the United States and Germany, though proclaiming her neutrality, she again expressed her sympathy with the United States. When notified by Brazil of the revocation of the decree of neutrality in the war between the United States and Germany the Uruguayan Government expressed to the Brazilian Government its sympathy and accord with the ideas enunciated by the Brazilian Government in favor of Pan-American solidarity and expressed its earnest desire to bring about joint action, on the principle that "any act perpetrated against one of the countries of America in violation of the precepts of international law as universally recognized shall constitute an offense against all of them and consequently cause a common reaction in all." On June 15 the Uruguayan Senate decided that if American warships visited Uruguayan ports they would be treated as non-belligerents and the Uruguayan Minister of Foreign Affairs informed the United States of the decision of the Uruguayan Government to receive as friends and without restrictions American war vessels entering Uruguayan ports for any purpose. The decrees of neutrality in force as to the United States and Cuba were revoked and President Viera issued a proclamation on June 19 stating that Uruguay would not regard as a belligerent any American nation which, in defense of its own rights, finds itself at war with nations of other continents.

After the Count von Luxburg disclosures the Uruguayan Congress was called in special session to meet on Sept. 29 to consider the question of the severance of diplomatic relations with Germany. After an all-night joint session of the two houses of Congress, the President was authorized by a vote of 74 to 23 to sever diplomatic and commercial relations with Germany and to adopt measures to coöperate with friendly nations. In a speech to Congress the President made it clear that Uruguay entered the war not because of any particular grievance but in a desire to align herself to the cause of liberty, justice and the rights of small nations. On the same day passports were handed to the German Minister, guarantees were given for his personal safety while in the country, and Uruguayan representatives in Germany, when applying for their passports, were instructed to request the same guarantees while still in that country. On Oct. 15, by presidential decree, Uruguay indicated that the rules of neutrality would not be applied to the Entente Allies. On Oct. 23 it was stated in the press that the British Government had granted a safe conduct for the return of the German Minister on a Dutch vessel.

PERU

Severance of Diplomatic Relations with Germany.—On Feb. 8 the Peruvian Minister at Berlin was instructed to demand reparation and indemnity for the sinking of the Peruvian bark *Lorton* on Feb. 5 by a German submarine in Spanish territorial waters and in a later note to the American Government the Government of Peru expressed its appreciation of the "principles and intentions" of the United States in breaking off diplomatic relations with Germany. The German Government, on Feb. 15, replied to the Peruvian note and stated that the case of the *Lorton* was under investigation. On July 28 President Pardo addressed the Peruvian Congress, sympathetically outlining the substance of President Wilson's address to Congress of April 2, adding that Peru "can not be indifferent to the words of President Wilson and adheres . . . to such noble purposes." The President referred to the suspension of diplomatic relations by Brazil, Cuba, Bolivia and Panama and to Uruguay's initiative in welcoming American warships in their ports as brothers and not belligerents, "a concept compatible with terms of benevolent neutrality, to which act my Government has adhered with sympathy."

On Aug. 8 the Peruvian Senate unanimously adopted the following resolution:

> In view of the high and democratic ideas expressed by President Wilson on the Republic of the United States taking part in the European conflict, the Senate of Peru declares that it emits a vote of sympathy to the United States of North America on account of the declarations made by its President that embody for the Republics of the American Continent the rules of the united action to which their purposes must be consecrated.

On Aug. 9 it was announced that the Peruvian Government had refused an offer of the German Government to submit the case of the *Lorton* to a Prize Court and again insisted on reparation and indemnity therefor. No reply having been received to the further notes of the Peruvian Government with reference to the *Lorton* the Government on Sept. 26 demanded satisfaction from Germany within eight days, adding that, if its demands were not met, diplomatic relations would be severed. On Oct. 4 it was announced that the Peruvian Government had discovered that its Minister at Berlin, A. von der Heyde, had disobeyed instructions and had not delivered the note of Sept. 26. The Minister was reprimanded and ordered to present the note immediately. On Oct. 6 the Peruvian Congress by a vote of 105 to six decided to sever relations with Germany and on Oct. 11 it was announced that the Government had granted the use of Peruvian ports to a British squadron. In notifying Secretary Lansing of the breach of diplomatic relations the Peruvian Foreign Minister indicated that the Peruvian Government acted in accordance with its desire "that the policy of the whole continent be a concerted ratification of the attitude of the United States, which took up the defense of neutral interests and insisted on the observance of international law."

OTHER SOUTH AMERICAN REPUBLICS

Attitude Toward the War.—On Feb. 8 the Bolivian Government vigorously protested against unrestricted submarine warfare as an infringement of the "imprescriptible rights of civilization and humanity," and announced its solidarity with the United States Government. On April 13, after the declaration of war on the part of the United States, the German Minister at La Paz was handed his passports with a note announcing the breach of diplomatic relations.

Although protesting against the institution of unrestricted submarine warfare, Chile declared it was her intention to maintain her neutrality and again issued a declaration of neutrality when the United States entered the war. She, however, expressed her sympathic appreciation of the motives of Uruguay in declaring that it would not regard as a belligerent any American nation which finds itself in a state of war with nations of other continents and of Brazil and Peru in severing diplomatic relations with Germany. Paraguay expressed its sympathy with the United States after notification of the declaration of war by the latter but maintained its attitude of neutrality. The Ecuadorian Secretary of Foreign Affairs, on Oct. 8, notified the Ecuadorian Legation at Lima that Dr. Perl, the Minister Resident at Lima, who was also accredited to Ecuador, would not be received officially by the Government in case he endeavored to come to Ecuador after leaving Peru, and on Dec. 8 it was officially announced that Ecuador had severed diplomatic relations with Germany. On Oct. 22 it was announced that the Columbian Senate had passed a resolution protesting against submarine warfare. Venezuela did not modify her attitude of neutrality in the war during the year.

INTERNATIONAL RELATIONS OF THE FAR EAST AND AFRICA

CHINA

Settlement of the Cheng Chiatun Incident.—After the formation of the Terauchi Ministry in Japan (*A. Y. B.*, 1916, p. 143) the Japanese Government, on Jan. 5, stated that it would not insist upon the suggestions for the employment of Japanese military instructors to be stationed in South Manchuria and Eastern Inner Mongolia as a result of the Cheng Chiatun incident. (*A. Y. B.*, 1916, p. 100.) The matter of the stationing of Japanese police in towns where there were large Japanese settlements was not pressed and on Jan. 23 it was announced that the incident was settled, the Chinese Government having agreed to reprove the general commanding the 28th division, to inflict such punishment as is provided by law on the officers responsible, to enjoin by proclamation upon Chinese soldiers and civilians to accord considerate treatment to Japanese soldiers and civilians in districts where there is a mixed residence, to send a representative of the Military Government of Mukden to Port Arthur to convey his regrets to the Military Government of Kwangtung and the Japanese Consul General and to pay $500 to the Japanese merchant whose case gave rise to the incident. The Japanese Minister stated that when the above stipulations were carried out by the Chinese Government the Japanse troops sent to reënforce the Japanese detachment at the time of the incident would be withdrawn.

Breach of Diplomatic Relations with Germany.—On Feb. 9 the Chinese Minister of Foreign Affairs handed the German Minister at Peking an energetic protest against the ruthless submarine warfare inaugurated by the German Government, stating that it hoped the submarine measure would not be carried out, but if the protest of the Chinese Government proved ineffectual, the Chinese Government would be constrained to sever diplomatic relations with Germany. On the same date the Minister of Foreign Affairs informed the American Minister at Peking of the action taken, adding that "the Chinese Government, being in accord with the principles set forth in your Excellency's note, firmly associates itself with the Government of the United States of America." A Foreign Office statement to the press announcing the protest of China stated that many Chinese passengers and seamen on board foreign ships had lost their lives as a result of Germany's submarine warfare.

On March 4 the Chinese cabinet decided in favor of breaking diplomatic relations with Germany. The President delayed some days in carrying out the wishes of the Cabinet but finally agreed to submit the matter to Parliament. Both houses of the National Assembly voted by large majorities in favor of a breach of relations. On March 11, just after the House of Representatives had voted on the question of severing relations, but before the Senate had acted thereon, a note was received from the German Minister indicating Germany's unwillingness to modify its submarine decree of Jan. 30 but informing the Chinese Government of Germany's willingness to negotiate with it concerning the protection of Chinese lives and property. The reply was regarded as unsatisfactory and diplomatic relations were broken on March 14. German vessels in Chinese ports were taken in charge for policing purposes by officers of the Ministry of the Navy. On March 15 and 16 the German concessions at Hankow and Tientsin were taken over by the Chinese.

Just prior to the Parliamentary vote on the question of severing relations Dr. Sun Yat-Sen, the leader in the Revolution that overthrew the Manchus, and several of his followers in South China, telegraphed the British Premier protesting against China's being "coerced" into the war by the Allies and prophesying troubles similar to the Boxer outbreak if China went to war. No information that has been made public would indicate any basis for the charge made in Dr. Sun's telegram. After its protest in regard to unrestricted submarine warfare China approached the Entente with proposals, in the event of the severance of diplomatic relations with Germany, for the postponement of the payments of the Boxer indemnity, an increase in the Chinese import tariff (a matter regulated by treaty, for the modification of which China had previously instituted negotiations with the principal powers), and a cancellation of the provisions of the protocol of 1901 with reference to the prohibition on the presence of Chinese troops within a radius of 20 *li* of Tientsin and the stationing of foreign troops in the Legations and along the railway to Peking, on the ground that these provisions might impede the effectiveness of precautionary measures of the Chinese Government *vis à vis* the Germans. These proposals were acknowledged by the Entente in a noncommittal note on Feb. 28 and were renewed on March 14, the day of the breach of relations. In return for these concessions China offered assistance in the supply of primary materials and labor to the Entente. In reply to China's proposals the Entente raised certain further questions as to the attitude China proposed to adopt toward German subjects and property in that country and as to China's attitude toward Austria-Hungary. To these questions the Chinese Foreign Minister replied on March 20, but no decision was reached at the time.

On March 19 it was reported that Japan had bought the island of Macao, at the entrance to the Canton River, from Portugal, but no confirmation of the report has been received. According to the terms of the treaty of commerce of 1887 between Portugal and China, Portugal obligated herself to obtain the consent of China before alienating Macao and its dependencies.

French Protest Against American

Concession.—On April 12 it was reported that the French Minister at Peking had protested to the Chinese Government against the survey already under way of a railroad to be constructed in Kwangsi Province by an American company organized by the American International Corporation under a concession from the Chinese Government (*A. Y. B.*, 1916, p. 101). The protest was based upon a secret document in the form of a letter dated Sept. 26, 1914, signed by the Minister of Foreign Affairs. In the letter the latter stated that when in future railway or mining enterprises, for which foreign capital is required, are undertaken in the province of Kwangsi, an offer will first be made to French capitalists. No developments in the matter have been announced.

Internal Disorders and the American Note.—Toward the end of April the Military Governors met and decided in favor of war with Germany. They sought an interview with the Premier, Tuan Chi-jui, who reported to the Cabinet which in turn declared in favor of war. President Li Yuan-hung expressed himself as approving such a declaration provided Parliament consented thereto, the Provisional Constitution providing that the President shall have power, with the concurrence of the National Assembly, to declare war. On May 10, three days after the war resolution had been submitted to Parliament, a crowd of voters appeared outside of the Parliament building and demanded under threats of violence instant action on the bill, preventing members of Parliament from leaving the building for some hours. Responsibility for this demonstration was placed upon the Premier by his opponents and the majority of his colleagues in the Cabinet resigned. Meanwhile, Parliament hesitated to meet, fearing a repetition of the demonstration of May 10. On May 15 Premier Tuan sent a message to Parliament reminding it that the war bill had been before it a week and demanding immediate action, but Parliament on May 19 refused to act until a new Cabinet was formed which could assume the responsibility of carrying out the declaration of war should it be decided upon, practically all the members of the old cabinet having resigned. To this action the Military Governors responded by demanding the dissolution of Parliament, basing their demand upon dissatisfaction with the draft Constitution, being drawn up by the House sitting as a constitutional conference. The President refused to dissolve Parliament and on May 23 dismissed Tuan Chi-jui, nominating Li Ching-hsi Premier in his place, both houses of Parliament approving the nomination by large majorities. By May 29 news began to come in that various military governors and provinces had declared their independence and the movement of revolutionary troops upon Peking began.

At this juncture, on June 4, the American Government telegraphed to its Minister at Peking the following note, to be presented to the Chinese Government:

> The Government of the United States learns with most profound regret of the dissension in China and desires to express the most sincere desire that tranquillity and political coördination may be forthwith reëstablished.
>
> The entry of China into war with Germany or the continuance of the *status quo* of her relations with that Government are matters of secondary consideration. The principal necessity for China is to resume and continue her political entity, to proceed along the road of national development on which she has made such marked progress.
>
> With the form of government in China or the personnel which administers that Government, the United States has an interest only in so far as its friendship impels it to be of service to China. But in the maintenance by China of one central united and alone responsible Government, the United States is deeply interested, and now expresses the very sincere hope that China, in her own interest, and in that of the world, will immediately set aside her factional political disputes, and that all parties and persons will work for the reëstablishment of a coördinate Government and the assumption of that place among the powers of the world to which China is so justly entitled, but the full attainment of which is impossible in the midst of internal discord.

Several days later the American Government proposed the despatch of identic notes of a similar character to China by the British, French and Japanese Governments. The British Government indicated its willingness to act under certain reservations but the proposal apparently did not meet with a favorable response from Japan. The *Asahi*, a Tokyo newspaper, published a totally different note from the one actually sent, the complete text of which was not published in Japan until June 13, although it was published in the American press on June 8. The Japanese press indulged in much criticism of what it characterized as an unwarranted interference in Chinese internal affairs, referring to Japan's special position in China and basing its criticism largely upon the spurious note in the *Asahi*.

Declaration of War.—After the collapse of the short-lived attempt to restore the Manchu dynasty in China, the declination of Li Yuan-hung to accept again the presidential office, and the assumption by Feng Kwo-chang, Vice President under Li Yuan-hung, of the presidency, the Chinese Government again turned its attention to the question of relations with Germany. Parliament, which had been dissolved by Li Yuan-hung in the closing days of his power, had not been reconvened and Feng Kwo-chang appointed Tuan Chi-jui Premier and the latter appointed a Cabinet, which under the circumstances of the case necessarily acted without Parliamentary approval.

On Aug. 2 it was reported that the acting President had approved a unanimous decision of the Cabinet to declare war on Germany and Austria-Hungary, and on Aug. 14 a proclamation of war, signed by the President and the Cabinet, was issued, reviewing the efforts made by China to obtain a modification of Germany's submarine warfare, declaring war upon Germany and Austria-Hungary—since the latter has also adopted Germany's submarine policy—and declaring all treaties, agreements and protocols between China and the Central Powers abrogated. On Aug. 16 it was announced that the Austro-Hungarian Minister at Peking had notified the Foreign Office that he regarded China's declaratioin of war unconstitutional and illegal, as under the Constitution it required the approval of both houses of Parliament. His note was returned by the Chinese Foreign Office on the ground that as he no longer had any diplomatic status he had no right to address the Government.

On Sept. 10 it was reported that an agreement had been reached with the Entente Powers with reference to the postponements of payments of the Boxer indemnity, the period agreed upon being five years. According to the report Russia only waived one-third of the first part of the indemnity, in view of her financial needs. The attitude of the United States was complicated by the fact that Chinese students in the United States were being supported from its portion of the indemnity—but an agreement was reached with the United States on the understanding that this support would be continued by the Chinese Government. Measures were also taken looking toward the revision of the Chinese specific tariff by an international conference, so as to make the latter yield an effective five per cent., in view of the fact that the rates fixed in 1903 so to yield a five per cent. revenue did not in fact now yield more than an average of three and one-half or four per cent., due to the increase in the prices of most goods imported. It was announced on Sept. 14 that the President and the Cabinet had agreed to a plan of sending a trial division of 24,000 Chinese soldiers to France, if money, equipment and shipping were available. It was also reported that the Cabinet was in favor of sending 300,000 men to the front, but that to do so financial aid was necessary.

The Japanese-American Exchange of Notes.—On Nov. 2 the Secretary of State of the United States and Viscount Ishii, head of the special Japanese mission to the United States (*infra*) "in order to silence mischievous reports that have from time to time been circulated," exchanged notes setting forth their understanding of conversations which had passed between them with reference to the interests of the two governments in China. Each of the notes stated in identical language:

> The Governments of the United States and Japan recognize that territorial propinquity creates special relations between countries, and, consequently, the Government of the United States recognizes that Japan has special interests in

China, particularly in the part to which her possessions are contiguous.

The territorial sovereignty of China, nevertheless, remains unimpaired, and the Government of the United States has every confidence in the repeated assurances of the imperial Japanese Government that while geographical position gives Japan such special interests, they have no desire to discriminate against the trade of other nations or to disregard the commercial rights heretofore granted by China in treaties with other powers.

The Governments of the United States and Japan deny that they have any purpose to infringe in any way the independence or territorial integrity of China, and they declare, furthermore, that they always adhere to the principle of the so-called "open door," or equal opportunity, for commerce and industry in China.

Moreover, they mutually declare that they are opposed to the acquisition by any government of any special rights or privileges that would affect the independence or territorial integrity of China or that would deny to the subjects or citizens of any country the full enjoyment of equal opportunity in the commerce and industry of China.

In a statement issued when making public the text of the notes, Secretary Lansing said that for some time German propaganda and other malevolent influences had sown distrust between Japan and the United States by impugning the motives of the two Governments in their intercourse with China, and paid high tribute to Viscount Ishii's ability and sincerity which, he indicated, were largely responsible for the cordiality and success of the negotiations between the two Governments both with reference to China and in regard to coöperation in the prosecution of the war.

It was reported in the press on Nov. 11 that China had several days previously protested to the Japanese Government in regard to the exchange of notes as affecting China. On Nov. 12 the Chinese Minister at Washington delivered a note to the State Department stating that China had always respected the rights of friendly nations, including special relations created by the fact of territorial contiguity, in so far as they had been provided for by treaty with China, and that the Chinese Government would continue to adhere to this principle but could not be bound by any agreement entered into between other nations to which it was not a party.

SIAM AND LIBERIA

Declaration of War.—On July 22 Siam declared war against Germany and Austria-Hungary to "uphold the sanctity of international rights against nations showing contempt for the principles of humanity and respect for small nations," and interned German and Austrian subjects and all German ships in her ports. On Sept. 25 it was reported that the Siamese Government had had issued a call for volunteers, who may be sent to the western front.

On May 8 the republic of Liberia severed diplomatic relations with Germany and on Aug. 4 a joint resolution declaring war on Germany was unanimously passed by the Liberian Congress.

MOROCCO

American Recognition of French Protectorate.—On Jan. 17, 1917, it was announced that Secretary Lansing had just handed the French Ambassador a note recognizing the French protectorate in Morocco. It was stated in the note that the action was taken "notwithstanding the present conflict in Europe, in order to meet the wishes of the French Government and people, for which the Government and people of the United States entertain a traditional and sincere friendship." The question of American recognition of the French protectorate had been under negotiation for some time and it was understood that the American Government had requested certain guarantees of France before according recognition. It is assumed that these were given or satisfactorily assured before recognition was accorded.

INTERNATIONAL RELATIONS IN EUROPE

THE BALKANS

The Allies and Greece.—The year 1917 opened with a conference of the Allies at Paris called for the purpose of coördinating their attitude toward operations in the near East and especially toward Greece. As a result of the conference it was announced that Italy had entirely identified herself with the point of view of her allies as to the campaign in Macedonia and the attitude toward Greece. Following the adjournment of the conference it was announced that the Entente had dispatched a further note to the Greek Government requiring a compliance within 48 hours of the terms of the Entente note delivered before the close of the year (*A. Y. B.*, 1916, p. 95), demanding the reduction to a necessary minimum of all Greek forces outside of the Peloponnesus, the reëstablishment of the Allied control of telegraphs, posts, railway and police, interdiction of the meeting of reservists north of the Isthmus of Corinth, of the carrying of arms by civilians, the release of the imprisoned Venezelists, public apologies to the Allies and salutes to their flags, and the dismissal of the commander of the First Greek Army Corps concerned in the recent fighting between Entente and Greek forces at Athens. The Entente in turn guaranteed that the Venezelists would not be allowed to profit by the withdrawal of the Royalist troops from Thessaly and Epirus.

On Jan. 10 the Greek Government replied, meeting in general the Entente demands but not satisfying the latter in all respects. For example, no mention was made as to the time when the Venezelist prisoners would be released. The reply was therefore pronounced unsatisfactory and it was announced that the island of Cerigo, one of the Greek Ionian Islands, was occupied by the Entente on Jan. 10.

A few days later, however, it was reported that the release of the Venezelist prisoners had begun and it was then announced that the Greek Government in its latest reply had promised compliance with all the Entente demands. The blockade of Greek ports (*A. Y. B.*, 1916, p. 95), however, was continued until such time as all the promises of the Greek Government had been fully carried out.

On Jan. 25 the Greek Government formally apologized to the Allies and on Jan. 29, the required salute of the flags took place.

ALBANIA AND EPIRUS

On March 27 it was announced that the Greek Government had demanded of Italy the withdrawal of Italian troops from Epirus to Avlona. On April 21 it was reported that King Constantine had offered to form a cabinet satisfactory to the Entente if the latter would give guarantees that the French army would not invade Greece and that he would not be dethroned by England and France. There was reported to be an intimation on the part of the King that an unfavorable reply might lead to war. Early in June Italy proclaimed the independence of Albania under the protection of Italy. Previous to this time the various parts of Albania, which had been for some time without stable government, had been under different forms of control or influence, although Italy had occupied the strategic port of Avlona before her entry into the war and had continued to hold it. In January Austria-Hungary had proclaimed the autonomy of Albania. On June 8 Italian forces from Avlona occupied Janina, in Greek territory. Somewhat previously French troops were reported to have occupied Koritza in Albania.

Abdication of King Constantine.—M. Jonnart, a French senator representing the protecting powers, Great Britain, France and Russia (*A. Y. B.*, 1916, p. 91), was given plenary powers to deal with the Greek situation and proceeded to Athens, where on June 11 he presented an ultimatum to the Greek Premier, stating that the protecting powers had "decided to reconstitute the unity of the Kingdom without impairing the monarchical constitutional institutions that they have guaranteed to Greece," and demanding the abdication of King Constantine, who, "having manifestly on his initiative violated the Constitution of which France, England and Russia are the trustees," had lost the confidence of the protecting powers. According to reports King Constantine was given the choice of a successor from his family and a reply to the note was requested within 24 hours. On the following day King Constantine resigned, designating his second son, Alexander, as his successor and preparations were made for the immediate departure of Constantine and the remainder of his family for Switzerland. Entente troops occupied Athens for the preservation of order during the establishment of the new government and the blockade was raised. Russian troops did not disembark at Athens with those of their allies, due to a prohibition of the Russian Government, which announced that it was not in sympathy with the foreign policy of France and Great Britain in intervening to bring about a change of sovereigns, as it regarded this an unwarranted interference in the internal affairs of Greece.

King Alexander called upon Venezelos to assume the premiership, and on June 29 it was announced that diplomatic relations had been severed with Germany, Austria-Hungary, Bulgaria and Turkey. No declaration of war was issued, but it was announced on July 2 that the Government considered that it had assumed the declarations of the provisional government of Saloniki and that therefore a state of war with Germany and Bulgaria already existed (*A. Y. B.*, 1916, p. 94). It was later reported that Greece had taken measures to increase the size of its army and was preparing for active coöperation with the Entente forces at Saloniki.

Allied Conference on Balkan Affairs.—Greece still looked with distrust upon the Italian occupation of Janina in Greek territory and of those portions of Epirus inhabited by Greeks. To harmonize conflicting interests a conference of the Entente was called to meet in Paris on July 25. The United States was invited to participate but declined apparently on the ground that it had no army in the Balkans and was not at war with Germany's allies. Serbia, Roumania and Greece were invited to participate in the Conference but with only "consultative" powers. After two days' sessions the Allied Powers announced their unanimous decision to continue the war in the Balkans until they had rendered "impossible a return of the criminal aggression such as that wherefore the Central Empires bear the responsibility" and France, Great Britain and Italy agreed to withdraw their troops as soon as possible from ancient Greece, Thessaly and Epirus. Military occupation of the triangle formed by the Santi Quaranta road and the Epirus frontier was to be maintained provisionally as a measure of security, Italy and Greece to agree with reference to the reëstablishment of the civil administration under a commissioner to be appointed by Greece. France, Great Britain and Italy were to preserve a military and naval base on the island of Corfu during the duration of the war, Corfu remaining, however, under the sovereignty of Greece.

RUSSIA

Revolution and Recognition.—The announcement on March 16 of the abdication of the Czar was quickly followed by the announcement on March 22 that full recognition had been accorded by the United States to the Provisional Government. Foreign Minister Miliukoff, in replying on behalf of the Council of Ministers to the American Ambassador, indicated the particular gratification felt that the United States, whose democratic institutions were similar to those which it was desired to set up in Russia, was the first to recognize the Russian democracy. The various governments of the Entente recognized the new Government some days later, it being explained that the delay was due to the fact that some of the Entente diplomatic representatives were still awaiting instructions from their governments and it was desired that they should all act together in the matter.

Attitude Toward the War, and Teutonic Separate Peace Proposals.—The revolution was followed by desertions from the army, fraternization between the German and Russian troops, the German army having temporarily abandoned its active operations against the Russians, evidently in the hope of working up through fraternization a sentiment favorable to a separate peace. A Council of Workmen's and Soldiers' Delegates, which issued orders for the guidance of the troops and endeavored to frame the policy of the new Government, was formed and did much in the early days of its existence to undermine discipline in the Russian army and to make impossible effective military operations.

The Provisional Government, through the Foreign Minister, M. Miliukoff, however, indicated in a note to the Entente powers that Russia would remain faithful to her allies and ratified the various treaties entered into with them by the Imperial Government. On the ground that this committed the Russian Government to any arrangements made by international agreement for the eventual disposition of territories that had been or might be gained as a result of the war, the more radical elements in the Council of Workmen's and Soldiers' Delegates vigorously protested, and M. Miliukoff, together with a number of his associates, resigned. M. Terestchenko assumed the portfolio of Foreign Affairs and announced a programme of "no annexations and no indemnities" as demanded by the Socialists. All claims to Constantinople, which M. Trepoff, then Premier, definitely informed the Duma on Dec. 3, 1916, had been assigned by the Allies to Russia, were renounced.

This announced programme of "no annexations and no indemnities" was promptly followed in Austria by semi-official statements and interviews with prominent officials to the effect that Austria, too, desired no annexations or indemnities, and that therefore there should be no reason why the two countries should not come to an agreement for peace. It was reported that Prince Leopold of Bavaria, in command on the Russian front, had been delegated by Germany and Austria to prepare the way for a separate peace. Early in June it was announced that two Austrian generals, 10 officers and 15 soldiers had been arrested, having passed through the Russian lines and demanded an audience with the Council of Workmen's and Soldiers' Delegates at Kishinev, presumably to discuss a separate peace. Shortly thereafter it was stated that German separate peace offers had been transmitted through the Chief of the Swiss Political Department and the Swiss Minister at Petrograd to Robert Grimm, a Russian socialist, who had recently returned from Switzerland, on the basis of restitution of occupied territories, close economic and financial relations between Germany and Russia, and an "*entente cordiale*" among Poland, Lithuania and Courland, it being stated that Germany would not undertake an offensive against Russia as long as an arrangement was possible. Maxim Gorky also announced in his newspaper that he had been approached by an emissary of the Bulgarian Minister at Stockholm with overtures with reference to a separate peace, to which overtures he refused to listen. It was also reported in June that Field Marshal von Hindenburg had offered Russia an armistice to cover the period of the elections to the constitutional convention. Kerensky, the Premier and Minister of War, in the reorganized Cabinet of the Provisional Government, stood firmly against a separate peace, but the opposition among the more radical elements in the Council of Workmen's and Soldiers' Delegates and in the army made it doubtful whether he would be able to control the situation.

American and British Notes and the American Commission.—Chaotic conditions in Russia impressed upon President Wilson the advisability of sending to Russia an American Commission to offer American coöperation and aid, to familiarize the Russian people with the American point of view and to endeavor to stem the tide in favor of a separate peace or, at least, military inaction in Russia. To head this Commission, which arrived in Petrograd on June 13, the President appointed Elihu Root, former Secretary of State. The commission included General Scott, then American Chief of Staff, and naval, financial and socialist representatives, and its efforts are believed to have had an important effect in tiding the new Russian democracy over a critical period. Together with the Root commission, the President sent a railroad commission, composed of prominent railway engineers, headed by Mr. John F. Stevens, to place their services at the disposal of the Russian Government in the organization and improvement of its inadequate and disorganized transportation facilities.

Shortly before the arrival of the American commission in Russia, President Wilson, in a telegraphic message to the American Ambassador at Petrograd, which was delivered to the Russian Government on May 26, restated to Russia the objects of the United States in entering the war. In his message the President affirmed that America seeks "no material profit or aggrandizement of any kind" from the war and warned the Russian Government against German peace propaganda based upon the restoration of the *status quo ante bellum*, from which *status quo* the war sprang. He pointed out the need of altering this *status quo* so as to make impossible a recurrence of such a war.

The note concludes:

> No people must be forced under sovereignty under which it does not wish to live. No territory must change hands except for the purpose of securing those who inhabit it a fair chance of life and liberty. No indemnities must be insisted on except those that constitute payment for manifest wrongs done. No readjustments of power must be made except such as will tend to secure the future peace of the world and the future welfare and happiness of its peoples.
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> And then the free peoples of the world must draw together in some common covenant, some genuine and practical coöperation that will in effect combine their force to secure peace and justice in the dealings of nations with one another. The brotherhood of mankind must no longer be a fair but empty phrase; it must be given a structure of force and reality. The nations must realize their common life and effect a workable partnership to secure that life against the aggressions of autocratic and self-pleasing power.
>
> For these things we can afford to pour out blood and treasure. For these are the things we have always professed to desire, and unless we pour out blood and treasure now and succeed, we may never be able to unite or show conquering force again in the great cause of human liberty. The day has come to conquer or submit. If the forces of autocracy can divide us they will overcome us; if we stand together, victory is certain and the liberty which victory will secure. We can afford then to be generous, but we cannot afford then or now to be weak or omit any single guarantee of justice and security.

On June 11 the following note of the British Government was made public:

> In the proclamation to the Russian people enclosed with the note it is said that free Russia does not purpose to dominate other peoples or take from them their national patrimony, or forcibly occupy foreign territory. In this sentiment the British Government heartily concurs. It did not enter the war as a war of conquest, it is not continuing it for such object. The British Government's purpose at the outset was to defend the existence of its country and enforce respect for international engagements. To those objects have now been added that of liberating populations oppressed by alien tyranny.
>
> The British Government heartily rejoices, therefore, that free Russia has announced her intention of liberating Poland, not only Poland ruled by the old Russian autocracy, but equally that within the dominion of the Germanic empires. In this enterprise British democracy wishes Russia godspeed.
>
> Beyond everything we must seek such settlement as will secure the happiness and contentment of peoples, and take away all legitimate causes of future war.
>
> The British Government heartily joins with its Russian ally in acceptance and approval of the principles laid down by President Wilson in his historic message to the American Congress. These are the aims on which the British peoples are fighting. These are the principles by which their war policy is and will be guided.
>
> The British Government believes that, broadly speaking, the agreements from time to time made with its Allies are conformable to these standards, but if the Russian Government so desires, it is quite ready with the Allies to examine and, if need be, to revise these agreements.

On June 16 the Council of Workmen's and Soldiers' Delegates issued a proclamation rejecting the Austrian efforts toward a separate peace and exhorting the Russians to rally to the defense of their country. On Aug. 2 it was announced that Foreign Minister Terestchenko had sent a telegram to Russian diplomatic officers accredited to the Allied Powers stating that Russia "would continue the war to a final triumph of the principles proclaimed by the Russian revolution." Upon the dissembling of the National Council at Moscow President Wilson sent to the President of the Council the cordial greetings of the people of the United States, expressed "their confidence in the ultimate triumph of ideals of democracy and self-government against all enemies within and without" and gave "renewed assurance of every material and moral assistance" which the people of the United States could extend to the Government of Russia in the furtherance of the common cause.

On Sept. 26 Great Britain and France assured the Russian Government that they would not enter into any peace terms that would be detrimental to Russia.

Russian Separate Peace Proposals.—At the opening of the Russian preliminary Parliament on Oct. 20, Premier Kerensky reiterated that "Russia wants peace by right but we never will bow our heads to force." The Maximalists, or extreme Socialists, left the hall to express their disapproval of this attitude. The peace programme as drawn up by the Central Executive Committee of the Council of Workmen's and Soldiers' Delegates declared for the *status quo ante bellum* except as modified in certain cases by a plebiscite, autonomy for Poland, Lithuania and the Lettish provinces, compensation to Belgium, Serbia and Montenegro from international fund, an access to the Adriatic for Serbia, equal rights for the Jews in Roumania, neutralization of all straits leading to inner seas and also the Suez and Panama Canals, abolition of the right to torpedo merchant ships in war time, renunciation by all the belligerents of war contributions or indemnities in any form and of an "economic blockade" after the war, gradual disarmament by land and sea, the election by the people of the delegates to the peace congress and a condemnation of secret diplomacy.

On Oct. 25 it was reported that the Soviet (Council of Workmen's and Soldiers' Delegates) had adopted a resolution offered by Leon Trotzky, President of its executive committee, declaring that the salvation of the country lies in the conclusion of peace as quickly as possible and proposing an armistice to all the belligerents. To the desire of the Soviet to appoint a delegate to the Allied War Council to meet in Paris in November in order to bring up the question there of war aims and possible peace terms, the Entente Powers replied that the Council would only discuss the prosecution of the war and not war aims and only governmental delegates would be admitted to its deliberations. It was understood that the delegate of the Provisional Government to the Council was to be M. Terestchenko, the Minister of Foreign Affairs.

On Nov. 8 it was announced that the Maximalists had obtained control of the government at Petrograd and that the ministers of the Provisional Government, who had not left Petrograd in time to escape, were imprisoned. Kerensky had left the capital and was reported to have put himself at the head of loyal troops moving toward the capital. The Soviet chose Lenine as Premier and Trotzky as Minister of Foreign Affairs in the cabinet of radicals which it formed. Lenine declared for peace without annexations (usurpation of foreign territory or violent conquest of nationalities) and without indemnities and proposed that representatives elected by the people of all nations settle the question of peace. Meanwhile, he declared for a three months' armistice to begin immediately, during which time proposals of peace received from either side would be considered.

Germany and Austria accepted the proposals of the Maximalist government as an appropriate basis for negotiations, and the chief army administrations of Germany, Austria, Bulgaria and Turkey entered into negotiations with representatives of the Soviet and agreed upon a cessation of hostilities, to begin on Dec. 7 and last for 10 days, during which time negotiations were to take place as to the terms of the proposed armistice. It was stated on Dec. 6 that a note had been sent to the Legations of the Allied Governments at Petrograd announcing that at the initiative of the Russian delegation the armistice negotiations had been suspended for a week so as to give the Allied Governments an opportunity to take one of two courses, either to participate or to state "clearly and definitely before all mankind the aims for which the peoples of Europe may be called to shed their blood during the fourth year of the war."

It was also reported on Dec. 5, that Trotzky in a speech stated:

> If we alone must enter upon a truce we shall declare to Germany that we consider it unpermissible for troops to be taken from the Russian front to other fronts, inasmuch as we are proposing a loyal truce and it is not our will that

through truce France and England shall be crushed.

Reports indicated that the Roumanian army had joined with the Russian in the cessation of hostilities, Roumania being in fact entirely cut off from the Allies as a result of Russia's withdrawal from active participation in the war.

EFFORTS TOWARD PEACE

The Stockholm Conference Proposals.—On May 23 it was announced that the American State Department had denied the applications for passports to enable the designated representatives of the majority of the Socialist party in the United States, Morris Hillquit, Victor Berger and Algernon Lee, to proceed to Stockholm to attend the conference called through the medium of the International Socialist Bureau. A minority of the Socialist party in the United States had denounced the proposed conference on the ground that from its inception it had been inspired by Germany. Secretary Lansing based his decision upon the Logan Act of 1799, passed during the days of the French Revolution, imposing penalties of fine or imprisonment upon unauthorized persons who directly or indirectly treat with foreign agents regarding controversies of the United States.

The plan of the Stockholm Conference was for representatives of the Socialist parties in the various belligerent and neutral countries to make known to a committee of Dutch and Scandinavian Socialists, who took the initiative in the matter, their ideas as to possible peace terms. As a result of these preliminary hearings it was hoped that a basis for peace might be agreed upon. Representatives of the Russian Socialists, and of both the majority and minority factions of the Socialist party in Germany, received passports from their governments to attend the conference. M. Vandervelde, the Belgian President of the International Socialist Bureau, while not opposing the idea of the conference, refused to act as sponsor therefor or to attend. An invitation from the Dutch Federation of Trade Unions to attend a labor conference at Stockholm to take place simultaneously with the Socialist Peace Conference—early in June—was declined by the American Federation of Labor. After considerable opposition, the French Socialist party voted to attend the Stockholm Peace Conference, but on June 1 Premier Ribot announced that passports would not be issued to its representatives as long as there was danger of their meeting enemy delegates in Stockholm. It was stated that representatives of British labor, who were proceeding to Petrograd with British passports to place the point of view of British labor before the Council of Workmen's and Soldiers' Delegates, would stop off at Stockholm to confer with the Dutch-Scandinavian committee there.

Failure to obtain a general representation of Socialists from the Allied Countries limited the activities to preliminary work and the date for the conference was postponed from time to time. The German minority Socialist delegation laid before the Dutch-Scandinavian committee a peace programme which included disarmament, freedom of trade, democratic control of foreign policy, the independence of Belgium and Serbia, independence for Poland, including German and Austrian Poland, a plebiscite in Alsace-Lorraine, no indemnities but reparation for losses to Belgium, and the enforcement of peace by the international Socialist proletariat.

On May 9 the Executive Committee of the Russian Council of Workmen's and Soldiers' Delegates adopted resolutions favoring the calling of an international socialist conference to be held at Stockholm, which delegates of the Socialist parties of the various countries were invited to attend. Morris Hillquit and his *confrères* renewed their applications for passports to attend this conference but again met with a firm refusal from the Department of State. On Aug. 10 the British Labor Party voted by 1,046,000 to 550,000 to attend this conference after listening to an address from Arthur Henderson, of the British Cabinet, who had just returned from an official mission to Petrograd, recommending participation. Premier Lloyd George censured Mr. Henderson's action in the matter and the latter resigned from the Cabinet. In addressing Parliament the Premier announced that the Government would not grant permission for British representatives to attend the conference and that France, Italy and the United States had reached a similar decision. On Aug. 15 Premier Kerensky announced that the Russian Government would not refuse passports to Russian Socialist delegates to Stockholm but that decisions arrived at by the Conference would be in no way binding upon the Russian Government. On Aug. 21 by a narrow margin of 3,000 votes, British labor stood by its previously determined plan of sending delegates to the conference. An inter-allied Socialist conference held at London on Aug. 28 and 29, however, after much discussion failed to reach any decision with reference to the conference. The Belgian delegates indicated their firm opposition to participation and on Sept. 3 the Parliamentary Committee of the British Trade Union Congress reported unfavorably upon the Stockholm Conference plan, which, it concluded, now gave no hope of success.

The recommendation of the Committee was adopted by the Trades Union Congress at Blackpool on the following day by an overwhelming majority.

Subsequently the date for the Stockholm Conference was indefinitely postponed, although on Oct. 18 the Organizing Committee of the Conference issued a manifesto or peace programme based upon no annexations or indemnities (not to exclude reparation to Belgium for losses), a plebiscite of Alsace-Lorraine, independence for Russian Poland, limited autonomy for German and Austrian Poland, the Southern Slavs and Italian districts in Austria not given to Italy, joint jurisdiction by Bulgaria, Serbia and Greece over Saloniki, Bulgarian acquisition of East Macedonia as far as the Vardar, the restoration of Belgium with autonomy to Flanders and Wallonia, political independence for Ireland, autonomy for the Jewish colony in Palestine, restoration of Armenia to Turkey under guarantees, compulsory arbitration and general disarmament.

The Reichstag Peace Resolution.—On July 19 the committee of the majority parties of the Reichstag (including the Centrist or Catholic party, the National Liberal and the Majority Socialist parties) appointed to coöperate with the cabinet during the recess of the Reichstag unanimously adopted the following resolution:

> As on Aug. 4, 1914, the words of the speech from throne "We are not driven by desire for conquest" still hold good for the German people on the threshold of the fourth war year. For the defense of its freedom and independence, for the integrity of its territorial possessions, Germany took up arms. The Reichstag strives for a peace of mutual agreements and the enduring reconciliation of peoples. With such a peace compulsory acquisitions of territory and political, economic or financial violence are irreconcilable. The Reichstag rejects all plans that are directed toward an economic isolation and hostility of nations after the war. The freedom of the seas must be secured. Only an economic peace can prepare the way for the friendly association of peoples. The Reichstag will promote actively the creation of international juridical organizations. So long, however, as the enemy Governments do not accept such a peace, so long as they threaten Germany and her Allies with conquest and violence, the German people will stand together as one man, endure unshaken and fight until her right and that of her Allies to life and development is secured. In its unity the German people is invincible. In that the Reichstag knows itself as one with the men who protect the Fatherland in heroic battle they are sure of everlasting gratitude of the German people.

Dr. Michaelis, the German Chancellor; Count Czernin, the Austro-Hungarian Foreign Minister, and Dr. Erzberger, the leader of the Centrist party, all made statements during the month to the effect that if the Entente would renounce what they termed its ideas of conquest, "a peace by understanding" would be possible. Certain rather conflicting statements of Dr. Michaelis indicated, however, a reservation on the part of the Chancellor in his support of the Reichstag resolution.

PAPAL PEACE PROPOSALS

The Pope's Note.—Under date of Aug. 1, the Pope addressed the rulers and heads of states of the various belligerent powers in behalf of peace.

After stating that from the beginning of his pontificate in the midst of the horrors of war he had been actuated by three motives: (1) impartiality toward all the belligerents; (2) a desire to do the greatest amount of good without distinction of nationality or religion; and (3) the omission of nothing that might contribute toward a just and lasting peace, the Pope refers to efforts on his part made at the end of the first year of the war to bring about a cessation of the conflict, to the horrors of the war and the greater horrors to be expected from its continuance and renews his peace proposals, now in more concrete form than in the past, inviting agreement "on the following points which seem to offer the bases of a just and lasting peace," leaving it with the various governments addressed "to make them more precise and complete":

First, the fundamental point must be that the material force of arms give way to the moral force of right whence a just agreement of all upon the simultaneous and reciprocal decrease of armaments, according to rules and guarantees to be established, in the necessary and sufficient measure for the maintenance of public order in every State; then, taking the place of arms, the institution of arbitration with its high pacifying function, according to rules to be drawn in concert and under sanctions to be determined against any State which would decline either to refer international questions to arbitration or to accept its awards.

When supremacy of right is thus established, let every obstacle to ways of communication of the peoples be removed by insuring through rules to be also determined the true freedom and community of the seas, which, on the one hand, would eliminate many causes of conflict, and, on the other hand, would open to all new sources of prosperity and progress.

As for the damages to be repaid and the cost of the war, we see no other way of solving the question than by setting up the general principle of entire and reciprocal condonation which would be justified by the immense benefit to be derived from the disarmament, all the more as one could not understand that such carnage could go on for mere economic reasons. If certain particular reasons stand against this in certain cases, let them be weighed in justice and equity.

But these specific agreements with the immense advantages that flow from them are not possible unless territory now occupied is reciprocally restituted. Therefore, on the part of Germany, total evacuation of Belgium with guarantees of its entire political, military and economic independence toward any power whatever must take place; evacuation also of the French territory; on the part of the other belligerents, a similar restitution of the German Colonies.

As regards territorial questions, as for instance those that are disputed by Italy and Austria, by Germany and France, there is reason to hope that in consideration of the immense advantages of durable peace with disarmament the contending parties will examine in a conciliatory spirit, taking into account as far as it is just and possible, as we have said formerly, the aspirations of the population, and if occasion arises adjusting private interests to the general good of the great human society.

The same spirit of equity and justice must guide the examination of the other territorial and political questions, notably, those relative to Armenia, the Balkan States and the territories forming part of the old kingdom of Poland for which, in particular, its noble historical traditions and the suffering particularly undergone during the present war, must win, with justice, the sympathies of nations.

American Reply.—To the Pope's peace proposals the American Government replied on Aug. 27 with appreciation of the moving appeal of his Holiness, the dignity and force of the motives that prompted it and the fervent wish that it might be possible to "take the path of peace he so persuasively points out. But it would be folly to take it," the note continues, "if it does not in fact lead to the goal he proposes":

Our response must be based upon the stern facts and upon nothing else. It is not a mere cessation of arms he desires; it is a stable and enduring peace. This agony must not be gone through with again, and it must be a matter of very sober judgment that will insure us against it.

That an acceptance of the proposals will not in the opinion of the American Government lead to a just and lasting peace is set forth in the note which concludes:

The test, therefore, of every plan of peace is: Is it based upon the faith of all the peoples involved or merely upon the word of an ambitious and intriguing government on the one hand and a group of free peoples on the other? This is a test which goes to the root of the matter, and it is a test which must be applied.

The purposes of the United States in this war are known to the whole world—to every people to whom the truth has been permitted to come. They do not need to be stated again. We seek no material advantage of any kind. We believe that the intolerable wrongs done in this war by the furious and brutal power of the Imperial German Government ought to be repaired, but not at the sovereignty of any people—rather a vindication of the sovereignty, both of those that are weak and those that are strong. Punitive damages, the dismemberment of empires, the establishment of selfish and exclusive economic leagues, we deem inexpedient and in the end worse than futile, no proper basis for a peace of any kind, least of all for an enduring peace. That must be based upon justice and fairness and the common rights of mankind.

We cannot take the word of the present rulers of Germany as a guarantee of anything that is to endure, unless explicitly supported by such conclusive evidence of the will and purpose of the German people themselves as the other peoples of the world would be justified in accepting. Without such guarantees, treaties of settlement, agreements for disarmament, covenants to set up arbitration in the place of force, territorial adjustments, reconstructions of small nations, if made with the German Government, no man, no nation could now depend on. We must await some new evidence of the purposes of the great peoples of the Central Powers. God grant it may be given soon and in a way to restore the confidence of all peoples everywhere in the faith of nations and the possibility of a covenanted peace.

On Aug. 31 Lord Robert Cecil, British Minister of Blockade, stated that in view of President Wilson's reply to the peace proposals, which in his opinion the Allies could not improve upon, he was not certain that any further response was necessary from the Allies. On Oct. 18 the same Minister stated in the House of Commons that the report that Great Britain had adopted the reply of the American Government as its own has not been official. He added that President Wilson's note was not the result of any consultation of the Allies. On Oct. 22 the Secretary of Foreign Affairs stated in the House of Commons that there seemed at that time no reason for adding anything to the acknowledgment of the Pope's note already sent by the British Government. The acknowledgment referred to is understood merely to have stated that the British Government would give the proposals careful and benevolent consideration.

Even before the dispatch of the American reply Japan was reported in the press as unfavorable to the Pope's proposals, and on Oct. 25 the Italian Minister of Foreign Affairs in addressing the Italian Chamber of Deputies stated that the Italian Government did not find in the Papal note "any sufficient indications of the fundamental principles which might guarantee the just and lasting peace we all invoke." In the same speech Baron Sonnino succinctly characterized Italian aims in the war as follows:

> Italy fights for the freedom of the world and for the completion of her national independence within the boundaries assigned to her by nature and to assure for herself in the Adriatic such conditions as are necessary for her existence and her legitimate safety.

On Oct. 17 it was announced that the Russian Ambassador at Washington had received a telegram from Foreign Minister Terestchenko expressing Russia's approval of the American reply to the Papal note.

No further indication has appeared as to what replies, if any, have been dispatched by the Allies to the Pope.

On Nov. 29 Lord Lansdowne, a member without portfolio in the Asquith coalition cabinet and Secretary of State for War and later for Foreign Affairs in the Conservative Cabinets during and following the Boer war, published in an English daily a letter in which he contended that an immense stimulus would be given the peace party in Germany if it was understood:

(1) That the annihilation of Germany as a great power was not desired.

(2) That we do not seek to impose upon the German people a form of government against their choice.

(3) That, except as a legitimate war measure we do not desire to deny Germany her place among the great commercial nations.

(4) That we are prepared after the war, in concert with the other powers, to examine the international problems connected with the freedom of the seas.

(5) That we are prepared to enter into an international pact under which ample opportunities would be afforded for the settlement of international disputes by peaceful means.

Replies of Central Powers.—According to an Associated Press report of

Aug. 27, Premier Radoslavoff, of Bulgaria, was quoted in a Budapest newspaper as stating that Bulgaria would claim Macedonia, the Dobrudja and the Ægean Littoral in her reply to the Pope's proposals. At the same time it was announced that a committee consisting of seven members, each of the Reichstag and the Bundesrath, had been appointed for the purpose of discussing the German reply.

On Sept. 22 the text of the German and Austrian replies was announced. These two Governments indicated that they found in the Papal note a suitable basis for initiating negotiations toward peace. Each note lauded the peace aims of the sovereign and supported the papal proposals for superseding "the power of arms by the moral power of right," the institution of obligatory arbitration for international disputes, the simultaneous and reciprocal limitation of armaments, and the freedom of the seas. No indication was given in either note as to the territorial readjustments that would prove acceptable. The German note stated that the questions raised in the papal note had been discussed "with representatives of the German people" in accordance with the Reichstag resolution of July 19.

On Sept. 26 it was stated in the press that Germany had announced its willingness to evacuate Belgium after the war upon certain conditions, including the administrative separation of the Flemish and Walloon districts and the recognition of Germany's right to develop her economic enterprises freely in Belgium, especially in Antwerp. A further press dispatch of Sept. 29, however, quoted a speech of the Imperial Chancellor, Dr. Michaelis, before the main committee of the Reichstag, as follows:

> I declare the statement that the Imperial Government had already communicated with this or that hostile government and that it had in advance renounced occupied territories, thus abandoning the most valuable advantages in peace negotiations, is untrue. I declare the Imperial Government has free hands for eventual peace negotiations. This also refers to Belgium.

On Oct. 10 it was announced that on the previous day Dr. Michaelis had told the Reichstag that peace was impossible as long as Germany's enemies demanded any part of German soil or endeavored to drive a wedge between the German people and the Kaiser. At the same time Foreign Secretary von Kühlmann made the significant statement that as far as he was able to view the situation there was "absolutely no impediment to peace, no question that could not be solved by negotiations," except the French demand for Alsace-Lorraine. Shortly before his resignation as French Minister of Foreign Affairs, M. Ribot, in a speech before the Chamber of Deputies, declared strongly for the reunion of Alsace-Lorraine with France, and on Oct. 26 it was reported that the Chamber had adopted a resolution demanding the restoration of these provinces "without compromise and without a plebiscite."

PEACE AND ARBITRATION

James L. Tryon

Wide-spread Interest in International Reorganization.—The regularly constituted movement for world peace has been marked by fewer conventions than usual, but the discussion of plans for world reorganization has continued, with radical differences of opinion as to sanctions of force. Although associations that came into being during the year or that had extreme pacifist programmes coöperated with European efforts towards an immediate ending of the war, the regular peace societies, recognizing the necessity for the overthrow of Prussian militarism and the liberalizing of autocracies as a condition precedent to lasting peace, supported instead of obstructing the government and made no campaign against conscription. The annual Lake Mohonk Conference on International Arbitration was omitted and the American Peace Society did not call the National American Peace Congress, but a Conference of Peace Workers met in New York City Feb. 23-24 as a continuation of that held in the preceding October to discuss permanent peace projects. The Interparliamentary Union has been unable to get together since the war began, but the appropriation of the United States Government for the entertainment of the Union, which expects to meet in this country after the war is over, was renewed. Gradually the American people, aroused from their provincialism to the obligations of the United States as a world power, have broadened their interest in peace and arbitration into a study of international relations and created a more sympathetic atmosphere than was formerly found for the consideration of new phases of international reorganization, a most important presentation of which was made by President Wilson in his address to the Senate on Jan. 22. Significant of this change of attitude was a National Conference on Foreign Relations of the United States that was held at Long Beach, Long Island, N. Y., May 28–June 1, under the auspices of the Academy of Political Science in the City of New York, to which representatives of the daily and periodical press were made delegates by invitation. Of this conference Professor Stephen P. Duggan was the organizing director and Professor Samuel McCune Lindsay the chairman. Former Justice Charles E. Hughes, Dr. Nicholas Murray Butler, Professor John Bassett Moore, Hon. Oscar S. Straus, and other distinguished men, including several diplomatists, were the speakers. In a widely reprinted paper on "International Legislation and Administration," Alpheus Henry Snow advocated an international directorate consisting of an expert executive committee acting under a superintending committee of representatives of the nations. The directorate, he held, should be subject to an international constitution, and though forbidden the use of physical international force should be granted all needful powers to investigate facts, to give counsel to governments, and to publish its proceedings and advice, so as to wield to the full the psychical force of the nations, and, thus forming public sentiment, to use it in bringing moral pressure to bear on a nation resisting the conciliative action of the international body.

Agencies for Peace with Justice.—The World's Court League which, through its magazine, *The World Court*, has published analyses and studies of projects for world organization, has elected Charles Lathrop Pack as president and enlarged its board of direction. The World Peace Foundation, of which Denys P. Myers has been made corresponding secretary and librarian, has disseminated a large quantity of carefully prepared literature on subjects related to international organization, and begun the periodical publication of *A League of Nations.* The League to Enforce Peace, President, Hon. William H. Taft, Secretary, William H. Short, now issues a weekly bulletin concerning its activities. The League has furnished speakers for Chautauqua meetings throughout the country, and, heartily supporting the government, has presented its message in military camps and helped to raise the Y. M. C. A. and Red Cross funds and the Liberty Loan. The League has kept in communication with publicists in foreign countries where sentiment for a league of nations is growing, as evidenced especially in Great Britain where a League of Nations Society has been formed and where there has been recently published, under the name of *Proposals for the Prevention of Future Wars* by Viscount Bryce and Others, the so-called Bryce plan. This plan has certain points, like a court and council of conciliation, in common with the platform of the League to Enforce Peace, but it pledges united action not only against a fellow member, but against a non-signatory power that declares war or begins hostilities or hostile preparations against a signatory power without first having submitted its case to an arbitral tribunal, or to the council of conciliation or before the expiration of prescribed periods of delay. The International Arbitration League, which was founded by Sir Randal Cremer, announces in *The Arbitrator* that it looks forward to a league of nations with power to enforce its will as the means by which a durable peace based on justice can be secured, together with a general, simultaneous, and substantial reduction of armaments, which the friends of the Bryce plan would give their council of conciliation the power to suggest. A "World Charter" by Paul Otlet (see *Advocate of Peace* for February) proposes a union or confederation of recognized states with all armed forces at the service of the Federal law to maintain peace. Freer trading privileges of nations in all colonies and spheres of influence, the freedom of the seas, and popular or parliamentary control of foreign policies, such as have been proposed by the Central Organization for a Durable Peace at The Hague, are frequently advocated.

Dealing with the problem of reorganization, but following closely the trend of the Hague Conferences and the Supreme Court of the United States, the American Institute of International Law, at its annual meeting at Havana, Cuba, Jan. 23, adopted what is known as the Declaration of Havana. This declaration favors a call for a third Hague conference, to be followed by stated meetings of the conferences, which it is hoped will reach an understanding upon certain principles of international law as set forth in the Declaration of the Rights and Duties of Nations adopted by the American Institute of International Law, Jan. 16, 1916; an agreement on the call and procedure of the conferences, to which all nations may be parties, and in which no one of them shall be allowed of right a preponderating part; the appointment of a committee to meet at regular intervals between conferences, charged with the duty of procuring ratifications of conventions and declarations, and with calling attention to them in order to ensure their observance; a council of concilation, good offices, mediation, and friendly composition for the settlement of disputes of a non-justiciable nature or for such disputes of a judicial nature as may not be submitted to a court. It is further proposed that there shall be created a judicial union on the basis of the Universal Postal Union pledging the contracting parties to submit justiciable disputes in differences involving law or equity to a permanent court of the union, the decision of which will bind not only litigating nations but all signatory parties. "A decent respect to the opinion of mankind" is believed to be sufficient to secure obedience and no provision is made for the use of physical force as a sanction. Both this declaration and that relating to the rights and duties of nations are being popularized by the American Peace Society. Believing in "a governed world," this historic society of the peace movement, which has survived the wars of nearly a hundred years, its field work going on, its membership loyal, stands firmly behind the President of the United States in his efforts through coöperation with the Allies to reëstablish international law and order. Congressman James A. Slayden of Texas, who is the head of the American group of the Interparliamentary Union, was elected president of the society in May and Arthur Deerin Call was reëlected secretary.

Under the active direction of Dr. Frederick Lynch, Dr. Sidney L. Gulick, and Dr. Charles S. MacFarland, the World Alliance for Promoting International Friendship through the Churches and the Commission on International Goodwill of the Federal Council of the Churches of Christ in America have been in close coöperation with the Church Peace Union, founded by Mr. Carnegie, which has given them financial support. The membership of the American Council of the World Alliance has been increased by new appointments and its influence strengthened by the adhesion of 18 different denominations. But while the British and German branches have continued to publish their magazines, and the churches of Norway have taken hold of the movement, the organization work of Professor Benjamin F. Battin has been confined to the nations of the Allies in Europe. Study courses on world organization and on American Oriental problems have been prepared for circulation in the United States.

The Carnegie Endowment for International Peace.—The Division of Intercourse and Education, directed by Dr. Nicholas Murray Butler, though still refraining from propaganda work in Europe, has kept a small office staff at its European bureau in Paris and been instrumental in serving a large number of students who use the Frederic Passy Library. It has also given aid to the Japan Society for the encouragement of the American public to read the most authentic books on Japan. The American Association for Conciliation has increased its monthly publications to a circulation of 130,000, and by this means furnished correct information for the study of the war. It has published a volume on plans for world organization entitled *Towards Enduring Peace*, compiled by Franklin H. Giddings and Randolph S. Bourne, which has been distributed among colleges and international polity clubs, while it has encouraged the idea of broadening the international viewpoint of the secondary schools, a work in which the American School Peace League (Mrs. Fannie Fern Andrews) has also been engaged. Conditions have prevented the extensive entertainment of foreign visitors, but an exchange of professors has been arranged between the University of Washington and the National University of Chile. The Pan-American Division of this association, under the leadership of Dr. Peter H. Goldsmith, has established a new magazine called *Inter-America*, which is to contain instructive contributions to current periodical literature translated from the Spanish and Portuguese into English and *vice versa*, while an Inter-America library of books written in Central and South American countries, translated from Spanish and Portuguese into English, is being put into actual circulation.

The Division of Economics and History, Dr. John Bates Clark, Director, is engaged in investigations covering three general topics: (1) the cost of war, broadly considered; (2) import and export duties as affected by the war; and (3) the quasi-socialism that has developed during the war and its relation to true socialism. The last study will cover the entire programme of public control of economic activities which have heretofore been left to private initiative and are now brought in different ways, partly or wholly, into the hands of the state because of military exigency.

The Division of International Law, Dr. James Brown Scott, Director, has arranged to take over from the Carnegie Institution the publication of classics of international law and looks forward to the publication of treatises on the principles of international law that have come into being during the war. The Endowment has also arranged for the publication of prize court decisions, communications, speeches, papers, and opinions relating to controversies over neutral rights, American statements concerning the Monroe Doctrine, reports of the Hague Conferences, and Treaties for the Advancement of Peace, together with William Jay's *War and Peace* and selected international essays of Elihu Burritt. The Endowment has established a chain of depository libraries of which 351 that are in the United States and 276 in foreign countries receive technical and highly scientific publications of value to specialists. Dr. Scott, through the various institutions with which he is connected, has actively led in the discussion of problems relating to world organization. The trustees of the Endowment have steadily supported the United States Government in the warfare for democracy.

III. FOREIGN AFFAIRS

LATIN AMERICA

Roscoe R. Hill

General Survey.—The most significant feature of Latin-American progress of the year 1917 was the demonstration of Pan-American solidarity following the break between the United States and Germany. This solidarity manifested itself despite the German influences, as in Brazil and Chile, the personal grievances of Colombia and the pre-war propaganda of Europeans, which sought to engender distrust against the United States in the countries of Latin America. When President Wilson sent his appeal to neutrals, asking that they join the United States in her attitude toward the German submarine warfare, all the Latin-American countries replied with energetic protests. After the declaration of war, sympathy and gratifying support were given by Latin America. During the year, war was declared by some nations, others severed diplomatic relations, and where neutrality was maintained, it was usually of a friendly character. By the close of the year, Cuba, Panama, and Brazil were in the war on the side of the United States, and Argentina, Bolivia, Costa Rica, Ecuador, Guatamala, Haiti, Honduras, Peru, and Uruguay had severed diplomatic relations with Germany. German propaganda to draw the countries of Latin America into an alliance, and German plots against the United States failed of their purpose in every country.

The continued development of Pan-Americanism was manifested in the meetings of the American Institute of International Law at Havana, Jan. 22, and of the Central Executive Council of the International High Commission at Washington, Jan. 20. The former of these considered the bases of international organization in the future, the new conception and new orientation of international law, the fundamental rights of the American continent, and maritime neutrality. The latter discussed negotiable instruments, legislation, trade-mark registration bureaus, commercial arbitration between chambers of commerce, regulations governing commercial travelers, and an international gold clearance fund.

The economic situation was still dominated by the European war. Most of the countries experienced difficulties in securing adequate shipping facilities, and not a little impetus was given to the development of national merchant marines. In every country efforts were made to increase the production of foodstuffs and other necessities. The shutting off of the supplies of coal and oil forced a search in many countries for fields that would produce these minerals. The development of new sources of wealth was given great attention, and manufactures were developed so as to render the countries more independent of manufactured imports.

The value of Latin-American commerce increased greatly, though the increase was rather in prices than in the bulk of the trade. All of the countries now have favorable trade balances. The United States has long occupied the dominant position in the trade of the Caribbean countries, and now because of the European situation is taking a preëminent place in the trade of all Latin America. The further duration of the war will produce added results favorable to the United States. If United States exporters seek to please, continued purchases during war times will form habits that will be hard to break after the declaration of peace. It is obvious that the European countries will make great efforts to regain the pre-war status in Latin-American trade. The amount of the Latin-American commerce is indicated by the figures of the trade between the United States and Latin America for the fiscal year ending June 30, 1917. The imports of Latin America from the United States for this year amounted to $585,267,796 and the exports were $960,235,559. These figures, compared with those for the year ending June 30, 1914, the last before the war, in which the imports were $279,362,201 and exports $467,946,014, show increases of 109 and 105 per cent. respectively. The principal imports from the United States were automobiles, coal, cotton cloths, structural iron and agricultural implements; and the exports were copper, nitrates, hides, wool, coffee, and rubber.

In general the internal political situation of Latin America was tranquil. Presidential elections took place in Mexico, Costa Rica, and Bolivia, and preparations for campaigns in 1918 were made in several countries. A revolution in Costa Rica overthrew the existing *régime* and established a new party in power. (See also II., *International Relations.*) Insignificant movements in Ecuador, Cuba and Bolivia were quickly suppressed. Mexico still experienced revolutionary activity, but of a less serious nature than in preceding years. As a result of revolutions, new constitutions were adopted in Costa Rica and Mexico.

The inter-Latin-American relations continued on a more friendly basis. The decision of Peru and Chile to renew diplomatic intercourse removed one of the thorny difficulties of these relations. Efforts for the reëstablishment of the Central-American Republic forecasted a new political era in that region. Progress was made in the matters of boundary settlements, and numerous treaties and conventions entered into by various states served to improve the Latin-American relations.

Provision of increased facilities for internal transportation, including railway extension and road building, occupied the attention of all the countries. Interest in education and educational problems increased. Study of educational systems, plans for their improvement, opening of new schools and added expenditures for education were significant phases of the educational development of Latin America. Social, economic, and industrial welfare was encouraged by many congresses, conferences, and expositions. There was also much valuable legislation along all these lines.

Argentina.—President Hipolito Irogoyen, who was elected in 1916 for a four-year term, controlled the executive power during 1917. In the annual message (June 30), the President dealt extensively with both domestic and foreign affairs. He devoted attention to recrimination and disapproval of past administrations, pointed out the difficulties in maintaining neutral rights of the nation, stated the position of Argentina with respect to the destruction of shipping by belligerents, explained the financial situation, and made promises to maintain strict economy, to foster production and commerce, and to meet all obligations promptly. The two most important proposals to Congress were the floating of an internal loan of 500,000,000 pesos and the establishment of a Bank of the Republic.

The problems raised by the world war were most serious in Argentina. (See also II, *International Relations.*)

Commerce continued to be affected by the war. Figures for the first quarter of 1917 showed imports amounting to 78,459,827 pesos gold, a decrease of 10,000,000 from those for the same period for 1916. The exports totaled 159,212,510 pesos, an increase of 32,000,000 pesos. On account of national necessities, embargoes were placed on exports of wheat, flour and coal (March 26). Finances were in a serious state, owing to the war, decreased imports, and crop failures. Loans were resorted to, and Germany even tried to maintain friendly relations by offering to finance public works (April). A law was proposed for the revision of the financial system, providing for a gold standard, with unlimited coinage, and for the retiring of the present double standard. The budget approved by Congress calculated the expenditures at 385,907,701 pesos currency (peso paper = $0.4256). A deficit seemed likely, as sufficient revenue was not provided to cover the expenses.

Final reports on the census of 1914 showed the total population to be 7,885,237, which was double that of 1895. The density was seven per square mile and foreigners comprised 30 per cent. of the population. Much attention was given to education. Provision was made for the opening of 643 new schools at the annual expenditure of 3,636,876 pesos (June). An executive decree (Jan. 1) extending the Sunday rest law, withdrew permission for stores to open on Sundays and prohibited the sale of alcoholic drinks between 12 P. M. Saturday and 12 P. M. Sunday. A strike of railway and electric light employees (September and October), which paralyzed shipping for 23 days, was terminated through the efforts of the President. The 10 per cent. increase in wages accorded was considered unsatisfactory by the employees.

Bolivia.—Ismael Montes closed, on Aug. 6, his successful presidential term, which is noted especially for progress in railway construction. After an exciting campaign, José Nestor Gutierrez, the conservative candidate, was elected president on May 8 for the term 1917-1921. Following the election, a slight revolt took place and the defeated democratic candidate J. M. Escalier was forced to take refuge in the Argentine legation. The inauguration of Gutierrez was a brilliant affair, attended by special representatives of many countries. Gutierrez appointed his cabinet as follows: Minister of Foreign Affairs, Julio Zamora; Finance, José Luis Tejada; Government, Ricardo Mujia; War, General Andres Muñoz; and Justice, Claudio Sanjines. Bolivia took a decided stand with regard to the German submarine warfare (see also II, *International Relations*). With a view of strengthening the financial situation of the country, Chandler and Co. of New York were appointed fiscal agents of the Government. A new loan of $2,400,000 was available on July 1 for railway extension, which received much attention from the Government through the year. The installation of auto-service between the railway terminals at Atocha and La Quiaca, Argentina, greatly improved the means of transportation between the two countries. A mining Congress held at Potosí in May discussed mining property, rules and regulations for mines, laws relating to accidents, and organization of coöperative and industrial societies for mines. Interest in education was manifested by a Congress of Students held in La Paz (July 15-17) and by the opening of a superior Normal Institute at the same place.

Brazil.—President Wenceslau Braz, whose four-year term expires in 1918, exercised the executive power during 1917. Due to the criticisms regarding the relations of Brazil to the German Empire, Lauro Müller, minister of Foreign Affairs, resigned on May 2 and was replaced by Nilo Pencanha, who favored placing Brazil on the side of the United States. The annual presidential message (May 3) discussed at length foreign affairs and finance, the two most important problems of the year.

Brazil showed little sympathy for the German submarine policy. The Government declared that it did not recognize the blockade as effective, that it would hold Germany responsible for whatever happened to Brazilian ships, and that it would not tolerate any obstacles to maritime intercourse. Diplomatic relations with Germany were severed in April after the sinking of the *Parana*. (See II, *International Relations.*) In November, Brazil entered the war on the side of the Allies. President Braz stated in his war message that the country was forced into this step by the acts of Germany and by the desire to defend the rights of humanity. The message also recommended measures which would restrict the business activity of German subjects and provide for their internment. Brazil continued to experience financial difficulties as during the last few years. At the beginning of the year the external debt amounted to $533,577,000 and the internal, $216,109,100. In July a new issue of 20,000,000 milreis ($4,800,000) of treasury notes was made. The Government was determined to meet all obligations promptly and resorted to many petty taxes to secure funds. This brought protests and adverse criticism. The policy of the administration was to cut down expenditures, encourage economy, and lessen the immediate responsibilities of the Government. The budget for 1917 estimated the expenditures at 98,533 contos gold (conto gold = $546) and 407,427 contos paper (conto paper = $250, approximately) and receipts at 128,335 contos gold and 340,138 contos paper. The effect of the war on trade became more evident through the year. Brazil exported many articles which formerly were only raised for home consumption. Before the war German shipping carried 65 per cent. of Brazil's trade. In order to replace the loss of these facilities, great strides were made in the development of Brazilian shipping.

Census returns published in January gave a total population of 24,600,000, of which number 18,000,000 were illiterates. The density of population was eight per square mile. A law was passed creating a forestry service, under the Department of Agriculture, which will have charge of the conservation and improvement of the forests. The arbitration treaty with the United States signed in Washington (July 24, 1914) was promulgated early in the year. With a view of developing the country, numerous expositions and congresses were held, including a Road Congress, a Cattle Congress, and a Fruit, Vegetable, and Flower Exposition.

Chile.—President Juan Luis Sanfuentes, who was elected in 1915 for a term of four years, continued his administration in 1917. The cabinet, formed at the opening of the term, resigned July 7 without giving any reason. A week later a new cabinet was appointed with Ismael Torcornal at its head. This cabinet was replaced in October by one composed of Eliodoro Yañez, Minister of Government; Eduardo Suarez Mujica, Minister of Foreign Affairs; Ricardo Salas Edwards, Minister of Treasury; Arturo Alemparte, Minister of Justice; Oscar Viel, Minister of War; and Malaquias Concha, Minister of Industry and Commerce. In the presidential message (June 1), the subjects discussed were foreign affairs, increased salaries for diplomats, electoral reform, better police system, and reform of the code of civil procedure. The extra session of congress (May 9) considered a merchant marine, the establishment of a department of agriculture, the employment of specialists in iron, steel, and ceramic industries, the regulation of cereal exports, the nationalization of mining, and the amendment of the banking laws.

In the reply to President Wilson's note concerning the German submarine warfare, the Chilean government stated that

> the blockade means a restriction of neutral rights to which Chile can not agree, because it is contrary to the principles for a long time established in favor of neutral countries, and because in concurring with it Chile would depart from the strict neutrality to which it has hitherto adhered. Consequently Chile reserves to itself full liberty to protest against any hostile act endangering Chilean ships.
>
> My government is of the opinion that this attitude is in agreement with the views of the United States respecting unity of action in defending the general interests of neutrals, and in attaining the high ideals of world peace as expounded by the President of the United States.

Upon declaration of war by the United States, Chile issued a proclamation of neutrality. It was considered that the Chilean attitude was affected by the large German population in that country.

Finances and business were in good condition. The budget placed the revenues at 89,750,000 pesos gold (gold peso = $0.36) and 123,450,000 pesos paper (paper peso = $0.22), and the expenditures at 65,207,578 pesos gold and 201,486,479 pesos paper. A new shipping law was promulgated (Jan. 29) which provided for a tonnage tax, reservation of coastwise shipping to national vessels after ten years, and fostering of a national merchant marine. Another law postponed the conversion of legal tender money until January 1, 1919. Carrying out the policy of public defense, a number of submarines were acquired from England. Much attention was given to port works and agriculture. Educational statistics published showed that in 1916 there were 15 normal schools with 400 graduates, 3,028 primary schools (148 new) with 342,020 pupils, 42 lyceums for boys with 16,500 pupils, 45 lyceums for girls with 11,725 pupils, and 11 commercial schools with 2,548 pupils. Plans were made for the improvement of the educational system. At the beginning of the year the population was estimated at 3,870,022.

Colombia.—President José Vicente Concha continued his successful administration. During the year elections were held for deputies to the departmental legislatures (Feb.), deputies to the national congress (May), and municipal officials (Oct.). Although the presidential election does not occur until February, 1918, the conservative party nominated Marco Fidel Suarez, the minister of Foreign Affairs, as candidate for the term 1918-1922. A new election law was promulgated combining all laws, decrees, and orders relating to elections. Important legislation passed by congress included laws relating to exchange and mintage of coins; laws for the prevention and checking of tuberculosis, for the establishment of a domestic money-order system, for the extension of good roads; laws amending the municipal and political codes, authorizing a loan for port sanitation, providing for pensions and wages, allowing free production and trade in denatured alcohol and domestic wines, and authorizing a standing army of 6,000, which may be increased to 20,000 by the president.

In March there were rumors that an alliance had been formed between Colombia and Germany, and that there were German submarine bases on the Colombian coast. These rumors were emphatically denied. It was not until October that the Colombian senate adopted a resolution protesting against the submarine warfare. There was discussion of the United States-Colombian treaty and much criticism of the attitude of the United States with respect to it. The budget for 1917 estimated the receipts at $14,885,000 and the expenditures at $16,369,965. A National Pedagogic Congress (Dec.) was held to discuss public instruction and to suggest to the government changes in the educational system.

Costa Rica.—On account of the reelection aims of President Alfredo Gonzales, whose term expired in 1917, and because of the proposed new system of taxation, a bloodless revolution of the army and citizenry under the leadership of General Federico Tinoco overthrew Gonzales on Jan. 24. Tinoco organized a provisional government, with Carlos Lara, Minister of Foreign Affairs, as head of the cabinet. This administration was supported by the business interests of the country and received a loan of $3,000,000 from the banks on very favorable terms. The United States, however, refused to recognize the revolutionary government. Late in the year this attitude was changed and the Tinoco administration was recognized. (See also II, *International Relations.*)

Elections were held on Apr. 2. Tinoco was elected president and a constituent congress was chosen. The new constitution promulgated in July provided that the president and vice president be chosen for six years by an electoral college composed of both houses of congress, representatives of the municipalities, the ex-presidents, judges, and cabinet officers; that judges of the supreme court be chosen for life; that capital punishment be prohibited; and that a department of public health be established. A clause providing for woman suffrage was rejected by the congress. Attempted revolts in behalf of Gonzales, said to have been supported by German interests, came to naught. Costa Rica opposed the idea of the German submarine campaign and, in spite of Wilson's refusal to recognize the Tinoco *régime*, placed the territorial waters and ports at the disposal of the United States (April). In September diplomatic relations with Germany were severed. A pension law for teachers became operative on Jan. 1. The budget approved by congress for 1917 calculated the expenses at 9,068,380 colones (colon = $0.465) and the receipts at 7,485,000 colones.

Cuba.—The result of the presidential election held in November, 1916, remained in doubt until the end of

April, both Liberals and Conservatives claiming the victory. After new elections had been held in several districts, the electoral college gave 122 votes to Menocal, Conservative, and 36 to Zayas, Liberal (Apr. 29). Before this date a revolt broke out (Feb. 9) under the leadership of ex-president José Miguel Gomez. At first the movement achieved some success and a number of towns fell into the rebel hands. The administration suspended the constitutional guarantees, undertook vigorous measures, and had the support of the United States in suppressing the revolution. The United States issued a number of warnings to the Cubans, one of which (Mar. 29) set forth the attitude of the United States government toward revolutionary movements in Cuba. The landing of United States troops, administration successes in several battles, the attitude of the United States, and the surrender of Gomez and other rebel leaders brought the revolt to a close (Mar.) (See also II, *International Relations.*)

On May 20 President Menocal was inaugurated for a second term, 1917-1921. A review of his first administration showed that most of its promises had been fulfilled. Education had been improved, immigration increased, resources developed, foreign trade extended, public works and highways constructed, and a Cuban coinage put into circulation. In response to the German war zone decree, Cuba at once took a stand with the United States. War was declared on April 8 and German ships in Cuban waters were seized. A military and naval commission was appointed (Apr. 26) to go to the United States and confer regarding coöperation in the prosecution of the war. To meet the increased expenses incurred by a state of war, new taxes were laid on sugar, and sugar, mining, and insurance companies. In July the constitutional guarantees were suspended and Congress was called in extra session. The reason given for these steps was the war, but the opposition claimed it was due to differences between the president and Congress. The president proposed a bill providing for the admission of immigrants from all countries to relieve the labor shortage. A two weeks' strike (May) of laborers in Havana harbor secured an increase of wages. In October a law was passed establishing a minimum wage and salary for all government employees. Decrees were issued forbidding the exportation of Cuban and United States gold, and fixing the price of foodstuffs (Apr.). The budget for 1917-18 estimated the receipts at $46,679,943 and the expenditures at $36,337,686.

Dominican Republic.—The American intervention continued in the Dominican Republic, despite rumors of withdrawal. Efforts were made for securing a final solution of the Dominican problem and a proposed treaty with the United States provided for a virtual protectorate. The United States officials reduced the salaries of the Dominican officers. This and other activities of the intervention government aroused much adverse criticism. Military commissions were appointed in January to study the needs of the diplomatic service and the reforms necessary in the educational system. A Dominican Claims Commission of 1917 was organized to investigate the outstanding claims against the government arising after the American-Dominican convention of 1907 and before the establishment of the present government (Nov. 29, 1916). Considerable attention was devoted to public works, especially the construction of roads and bridges.

Ecuador.—The administration was in charge of President Alfredo Baquerizo Moreno, who was elected in 1916. A slight revolt occurred in July in the coast provinces, but it was speedily suppressed. At the opening of Congress (Aug. 10), President Moreno read an interesting message dealing with domestic and foreign affairs. In reply to Carranza's invitation to neutrals to declare an embargo against all belligerents, Ecuador suggested a Pan-American conference to discuss neutrality (Feb.) and later issued an invitation to such a conference of the American Republics to "take necessary measures for securing a continental expression, principally for the guarantee of the rights of neutrality and, if it is possible, for the alleviation of the rigors of war." The important legislation of the year included a new customs law (Jan.), a law prohibiting the export of gold, one authorizing banks of issue to cease redeeming notes in gold (June), and a liquor law (Jan. 2) regulating distillation, rectification and manufacture of alcohols, wines, and spirits. Ratifications of the boundary treaty with Colombia were exchanged and the commissioners appointed to carry out its terms met in Quito. In October Ecuador refused to receive the German minister and in December diplomatic relations were severed with Germany.

Guatemala.—On March 15 President Manuel Estrada Cabrera was inaugurated for his sixth term (1917-1923), and Congress passed a law providing for the erection of a monumental arch to perpetuate his memory. Before adjournment (Apr. 30), Congress conferred upon the president extraordinary powers, to be exercised during the congressional recess. These included the power to contract loans, liquidate obligations, impose taxes, amend tariffs, modify budgets, and do whatever seemed expedient for the economic betterment of the country. The government protested against the German submarine warfare (Mar.) and declared martial law (Apr.) following disturbances on the Mexican and Salvadorean frontiers that were supposed to have been created with German assistance. Contrary to general expectations, Guatemala was the first of the Central American nations to sever diplomatic relations with Germany. The ports and railways of the country were placed at the disposition of the United States to be used for the common defense. A decree was issued in March regulating the prices of foodstuffs. The operation of the new customs tariff was suspended by the President, in response to a protest of the merchants of Guatemala City (March 15). Treaties of arbitration and commerce were entered into with Italy. The report for the department of education showed that in 1916 there were 1,942 primary schools, with 67,152 pupils, and 21 high schools. The budget for 1917-1918 approved by Congress provided for expenditures amounting to 64,780,957 pesos paper (peso paper = $0.025). Guatemala City was destroyed by earthquake in December.

Haiti. — The administration of President Sudre Dartiguenave, who was elected in 1915, continued peacefully throughout 1917. On April 17 a new cabinet was appointed with Furcy Chatelain as Secretary of Foreign Affairs; Etienne Magloire, Secretary of Agriculture and Public Works; Pericles Tessier, Secretary of Public Instruction; Osmin Cham, Secretary of Interior and Worship; and Edmund Heraux, Secretary of Finance and Commerce. A national congress assembled at Port au Prince in April to consider the new constitution proposed by the Council of State. The regular election of senators and deputies took place on April 11. In May, President Dartiguenave sent a message to Congress requesting a declaration of war against Germany, on account of the loss of Haitian lives. Congress refused to declare war, but protested against the submarine activity and authorized the president to break off diplomatic relations in case Germany refused reparation for the loss of lives and guarantees for the future. Upon the receipt of Haiti's protest, Germany suspended diplomatic relations (June).

Honduras.—President Francisco Betrand, who was elected in 1915 for a term of four years, continued his vigorous administration in 1917. The most significant event of the progress of 1917 was the proposal made by Honduras for the reëstablishment of the Central American republic. This idea was well received by the other countries. Unionist clubs were formed and active propaganda was carried on with a view of accomplishing this much-to-be-desired union. In May, Honduras severed diplomatic relations with Germany and took sides with the United States. A beneficial law, in force from April 1, prohibits the sale of liquors at all places where agriculture, mining, or railroading are carried on.

Mexico.—Mexico experienced the most tranquil year since the close of the Diaz *régime*. The outstanding features of the year's progress were the withdrawal of the American punitive expedition, the establishment of the Carranza *régime*, the discovery of the German plot, and the Mexican proposal of an embargo against all belligerents.

After four months of futile debates, the Mexican-American Joint Commission to discuss the problems arising from the Columbus raid and the punitive expedition to Mexico was dissolved in January. Before adjourning the Commission published the protocol (signed November, 1916) providing for the early withdrawal of the American troops and the occupation of the evacuated territory by the Carranza forces (Jan. 2). With no reference to the protocol, the American government decided to withdraw the expeditionary forces at once and to send an ambassador to Mexico, thus recognizing the Carranza *régime* as the *de jure* government.

The first important step in the final establishment of the Carranza *régime* was the promulgation of the new constitution (Feb. 5). This document was the result of the labors of the Constitutional Convention which assembled at Queretaro on Nov. 20, 1916. The new constitution was based on that of 1857, but contained many radical provisions. It provided for the abolition of the office of vice president, prohibition of the reëlection of the president, an eight-hour day, compulsory arbitration, profit-sharing, anti-trust laws, a national health department, and compulsory military instruction. The theory of "Mexico for the Mexicans" was given a prominent place. Preference was given to Mexicans in obtaining employment and securing land. Foreigners could only acquire real estate by becoming Mexican citizens. Large estates were to be divided and communal and tribal lands restored. Church and state were separated and all church property was to pass into the hands of the government. All clergymen were obliged to be Mexican citizens and were not allowed to teach in the public schools, nor in private schools except in the higher grades. Natural resources were reserved as property of the government. General elections took place on March 11 and Carranza was chosen constitutional president, the first since Madero. The inauguration occurred May 1 and many were inclined to consider this the closing date of the revolution which began with the overthrow of Diaz.

The relations of Mexico and Germany gave the American government grave concern. In February the nature of the German plot was revealed by the publication of instructions from the German foreign office, issued with the object of securing an alliance with Mexico. (See I, *International Relations.*)

These instructions seemed to indicate that Carranza's note (Feb. 13) to the neutral nations, proposing an embargo on shipments of munitions and foodstuffs to all belligerents, had a German inspiration. This proposal was opposed by the United States and found little favor with the other neutrals, although it called forth from Ecuador the suggestion of a Pan-American conference to consider the problems relating to the war. On March 18, Carranza issued a declaration of neutrality. Popular opinion was rather in favor of the Allies and there was considerable newspaper agitation urging the government to join the war on the side of the United States and the Allies.

The reorganization of the finances after so long a period of internal dissension presented many difficulties. It was calculated that the paper money issued by the Constitutional Government amounted to $671,954,221. A forced loan in metallic currency from the Bank of London and Mexico threatened to bring on foreign complications (Jan.). Increased taxes were placed on tobacco and liquors, and the property of the church was taxed (Mar. 18). In July the President was authorized by Congress to negotiate a loan of $100,000,000. To ameliorate the living conditions of the poorer classes, the duties on certain foodstuffs and cotton manufactures were reduced.

Villa refused to remain crushed, and continued his revolutionary movement through the year. He was defeated by General Obregon at Torreon (Jan. 3) and General Murguia was given a free hand to capture him, after the withdrawal of the Americans. Villa captured and held for a time various towns in northern Mexico and suffered numerous defeats. After several months of inactivity he captured Ojinaga in November, but lost it almost immediately. At the time of this latter activity, it was rumored that Felix Diaz had joined Villa in the effort to overthrow Carranza. Zapata allied with Villa early in the year, but caused little inconvenience to the Carranza government.

Nicaragua.—Emilio Chamorro was inaugurated president, on January 1, for the term 1917-1921. He organized his cabinet with José Andres Utrecho as Minister of Foreign Affairs; Martin Benard, Minister of Finance; Thomas Masis, Minister of War; Alfonso Solorzano, Minister of Interior; and Gutierrez Navas, Minister of Public Works. In his message to the extra session of Congress (July 1), Chamorro discussed measures for the improvement of the economic conditions of the country. Despite a strong undercurrent of pro-Germanism, Nicaragua severed diplomatic relations with Germany as a protest against the submarine warfare (May 20). A state of siege proclaimed on May 17 was continued for 60 days in August. In February a lively debate ensued regarding a proposed public credit commission, composed of two Americans and one Nicaraguan, to determine the disposition of the $3,000,000 to be paid by the United States for the canal concession. A new land law was enacted providing for homesteads of 50 hectares (123.5 acres) and for the sale of public lands at low prices to settlers either native or foreign. Another law permitted the free cutting of timber in the national forests and imposed a tax on all timber cut for export. A proposal was made for the amendment of the jury law, by the establishment of courts of review. A decree of February 2 extended complete amnesty to all political offenders. A second decision was rendered against Nicaragua, by the Central American Court, in the case regarding the Bryan-Chamorro treaty. Nicaragua showed no more inclination to abide by this decision than by the first (*A. Y. B.*, 1916, p. 85). The budget for 1917 estimated the expenditures at $2,094,944.

Panama. — Ramon M. Valdez, chosen in 1916 for four years, occupied the presidential chair in 1917. Panama took a decided stand regarding the German submarine warfare, first endorsing the attitude of the United States (Feb.) and later declaring war (Apr.). Assistance was offered to the United States for the defense of the Canal and a commission was sent to Washington to discuss the problems of the war (Apr.). Considerable beneficial legislation was passed. A fiscal reform bill (Feb.) provided a checking system for accounts, centralization of payments of public moneys, the bonding of all treasury officials, and the creation of the post of purchasing agent. Another law established mortgage banks with power to make long-time loans repayable in small installments. The President was given important powers relating to public works, the investigation of soils, the founding of the University of Panama and the establishing of a school of medicine and surgery. Amendments to the constitution were promulgated in May prohibiting capital punishment, fixing the term of the attorney general at five years, and providing for the election of president and vice president for four years by a direct vote of the people. New national codes of civil, commercial, penal, judicial, fiscal, and mining procedure were put into operation in October. Business conditions were in a bad state owing to international difficulties and the completion of the Canal. The Panamanian Government faced increasing obligations and decreasing revenues. The administration made every endeavor to introduce economies and fixed the expenditures in the budget at $7,189,170.

Paraguay.—Manuel Franco, who was inaugurated in 1916, was president in 1917. His message to Congress (Apr.!) reviewed the acts of the administration, calling attention to the progress and development of the country. In reply to the United States note on the German submarine war zone, the government expressed sympathy with the United

States which was forced into a war to rehabilitate the rights of neutrals. The protocol of Nov. 21, 1916, making the boundary agreement of 1913 operative until June 15, 1917, was approved by both Paraguay and Bolivia. The most important legislation was a homestead law, giving better opportunities to immigrants. Educational statistics published in April showed that in 1916 there were 477 schools for males and 473 for females with 44,623 and 35,519 pupils respectively. At the beginning of the year the external debt amounted to 5.860,835 pesos gold (gold peso = $0.9648) and the internal debt, 2,093,644 pesos gold and 151,100.190 pesos paper. The budget for 1917-1918 estimated the receipts at 1.908,000 pesos gold and 24,760,000 pesos paper, and the expenditures at 1,160,426 pesos gold and 48,162,302 pesos paper.

Peru.—President José Pardo, who was elected for four years in 1915, made several changes in his cabinet on account of resignations, and finally on July 24 completely reorganized it with Francisco Tudela as Minister of Foreign Affairs; German Arenas, Minister of Interior; Col. Cesar Lafuente, Minister of War; Baldomero Maldonado, Minister of Finance; and Ricardo L. Flores, Minister of Justice. The relations of Peru with Germany centered in negotiations regarding the sinking of the sailing vessel *Lorton*, for which Peru made demands for reparation and indemnity.

After months of futile negotiations, Peru severed diplomatic relations with Germany (Oct.). Difficulties were experienced with the Peruvian Corporation regarding the prohibition of the export of guano. The British minister lodged a protest with the government in behalf of the Corporation. The government, however, held that the Corporation only had right to appeal to the Peruvian courts and that the government had a right to use the guano in Peru if it saw fit to do so.

A happy event in South American relations was the final decision of Chile and Peru to resume their friendly intercourse which was ruptured in 1910 over the terms of the treaty of Ancon (Nov.). An arbitration treaty was drawn at Lima between Peru and Uruguay in July. Interest in educational progress was manifested by the establishment of an industrial school at Iquitos, the foundation of a National Educational League, and a law making compulsory the teaching of the effects of alcohol. Published educational statistics showed that in 1916 there were three normal schools with 277 pupils, 27 national colleges with 5,202 pupils, and 2,296 primary schools with 166,002 pupils. To counteract the high cost of living, an embargo on foodstuffs was laid in April. An agricultural credit law made it possible for farmers to secure funds for harvesting and developing the agricultural resources. Much attention was given to road building. To improve the financial situation, a law was enacted (Oct.) providing for progressive duties on sugar. The budget for 1917 estimated the revenues at Lp. 3,412.237 (Lp. = $4.8665). (See also II, *International Relations of Latin America*.)

Salvador.—The chief executive for the year was Carlos Melendez. In his annual message to Congress, he discussed banking and customs revenues. The legislation of 1917 included an appropriation of 250.000 pesos (peso = $0.586) for the construction of public schools, a law requiring municipalities to assign from five to ten per cent. of their revenues for building rural schools, and an export tax on hides. The statistics of the department of education showed that in 1916 there were 989 schools in the country, including 157 rural schools, 516 elementary, 21 intermediate, nine high, 58 night, two special, 8 charity, 25 municipal, 90 private schools and colleges, and three kindergartens. There were 47,371 primary pupils and 10,184 students in the higher institutions. A severe earthquake and eruption of Mount Jabali, on June 7 and several days following, completely destroyed San Salvador, Santa Tecla, Armenia, Quezaltepeque and many villages. The budget approved for 1917-1918 fixed the revenues at 14,153.950 pesos and the expenditures at 14,060,042 pesos. In October the government issued a declaration of neutrality friendly to the United States.

Uruguay.—Feliciano Viera continued in the presidential chair through the year. The revision of the constitution as outlined last year (*A. Y. B.*, 1916, p. 116) was the most important domestic problem. The election for senators and representatives took place in January. The government party, "the Reds," secured a majority of the seats and was accused by the opposition, "the Whites," of many frauds. Laws were passed governing the use of the Uruguayan flag on vessels, regulating the importation of silk fabrics, and requiring a seven years' course for the degree of doctor in medicine. Uruguay rejected the principles of the German submarine warfare, endorsed the action of the United States (Apr.) and declared that the German practices were an insult to humanity. Finally, in October, diplomatic relations were severed with Germany, not because of any direct offense, but from the necessity of espousing the cause of the defenders of justice, democracy, and small nationalities. Conventions regulating the interchange of professors were entered into with Argentina and Chile, and conventions providing for general compulsory arbitration and for the acknowledgment of educational certificates with Bolivia. Extradition, arbitration, and boundary treaties with Brazil were submitted to Congress by the President in February. The population of the country was estimated at 1,378,808 at the beginning of the year. (See also II, *International Relations of Latin America.*)

Venezuela.—The executive power remained in the same anomalous situation that has existed since 1915. V. Márquez Bustillos was the provisional president, while General Juan Vicente Gomez, the president-elect and the real power in the country, retained the position of commander-in-chief of the army. This condition of affairs continued to arouse much adverse criticism. In September a new cabinet was appointed, with Bernardo Mosquera as Minister of State; Ramón Cárdenas, Minister of Hacienda; Ignacio Andrade, Minister of Interior; C. Jiménez-Rebolledo, Minister of War and Marine; Gumersindo Torres, Minister of Agriculture, *etc.;* Luis Velez, Minister of Public Works; and Gonzalez Rincones, Minister of Public Instruction. Venezuela rejected the principles of the German submarine note and adhered to the policy of the United States. The most important legislation was a law providing that railways built under concession should belong in perpetuity to the concessionaires. This repealed the law providing for reversion to the state after a period of years. Other laws were enacted concerning coöperative societies, court procedure, regulation of workshops and public establishments, and prescribing an oath of office for public officials. In April, an Academy of Political and Social Sciences was established for the purpose of improving the character of the legislation of the country. Efforts were made to increase the production of foodstuffs. The budget for 1917-1918 estimated the receipts and expenditures at 44,120,000 bolivares (bolivar = $0.193).

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CANADA

ERNEST H. GODFREY

Political Situation.—On February 12 the Prime Minister, Sir Robert Borden, with two of his colleagues, Mr. Rogers (Minister of Public Works) and Mr. Hazen (Minister of the Naval Service), left for England to attend Imperial Conferences in London. They returned to Canada on May 15, and on May 18 the Prime Minister announced the intention of the Government to propose a measure of compulsory military service. He also entered into negotiations with the Opposition in Parliament with the object of forming a Union or Coalition Government. The Leader of the Opposition (Sir Wilfrid Laurier) declined the proposals made, but prolonged discussions with other representatives of the Liberal Party eventually resulted in an agreement, and on October 12 a Union Government was reconstructed as follows (the names of the new members are marked with an asterisk): Premier, Sir Robert Borden; Privy Council, N. W. Rowell*; Trade and Commerce, Sir George Foster; Interior, A. Meighen; Public Works, F. B. Carvell*; Railways and Canals, J. D. Reid; Finance, Sir W. T. White; Postmaster-General, P. E. Blondin; Marine, Fisheries and Naval Service, C. C. Ballantyne*; Justice, C. J. Doherty; Militia and Defense, Major-Gen. Mewburn; Overseas Forces, Sir A. E. Kemp; Secretary of State, M. Burrell; Labor, T. W. Crothers; Immigration and Colonization, J. A. Calder*; Inland Revenue, A. E. Sevigny; Customs, A. L. Sifton*; Agriculture, T. A. Crerar*; without portfolio, Sir James Lougheed, F. Cochrane, A. K. MacLean* and G. D. Robertson.* The Solicitor-General (Hugh Guthrie*), the Parliamentary Secretary for Militia and Defense (F. B. McCurdy) and the Parliamentary Under Secretary of State for External Affairs (Lt.-Col. Hugh Clark) have not seats in the Cabinet.

Parliamentary Session. — The twelfth Parliament of Canada was dissolved on Oct. 6, having sat for six years, or longer than any previous Parliament of the Dominion. The seventh and last session of this Parliament opened on Jan. 18 and closed by prorogation on Sept. 20. From Feb. 7 to April 19 the Houses adjourned to permit of the visit to England of the Prime Minister and his colleagues. The bill providing for compulsory military service was introduced on June 11, and on July 5 the motion for its second reading was carried by 118 votes to 55 after the defeat of various amendments. The principal amendment, moved by Sir Wilfrid Laurier, was to the effect that "the further consideration of the Bill be deferred until the principle thereof has, by means of a referendum, been submitted to and approved of by the electors of Canada." This amendment was lost on a division, the yeas being 62 and the nays 111. The bill was enacted as the Military Service Act (Ch. 19), on Aug. 29. It makes every British subject between the ages of 20 and 45, who is, or has been since Aug. 4, 1914, resident in Canada, liable to be called out on active service, excepting clergy and persons exempted as provided in the Act. Men who are liable to be called out are divided into six classes: (1) those between 20 and 34 who are unmarried or widowers with no child; (2) those of the same age who are married or widowers with a child; (3) those between 35 and 40 who are unmarried or widowers with no child; (4) those of the same age who are married or widowers with a child; (5) those between 40 and 45 who are unmarried or widowers with no child; (6) those of the same age who are married or widowers with a child. Exemption from service is provided for on various specified grounds, and during the fall and winter tribunals have actively been employed in hearing applications for exemption. The Act authorizes the calling out of 100,000 men, and the first drafts are to be called to the colors on Jan. 3, 1918.

For the first time in Canada the federal Parliamentary franchise is conferred upon women. The Military Voters Act (Ch. 34) gives the right to vote to every person, male or female, who, being a British subject, whether or not ordinarily resident in Canada and whether or not an Indian, has gone on active service in the Canadian naval or military forces, or who has, while within Canada, joined the British Royal Flying Corps, the Royal Naval Aviation Service, or the Auxiliary Motor Boat Patrol Service. The War Time Elections Act (Ch. 39) gives the right to vote to every female who has the provincial qualification as required in the case of males and is the wife, widow, mother, sister or daughter of any person, male or female, who is serving or has served with the naval or military forces of Canada or Great Britain in the present war.

The Income War Tax (Ch. 28) imposes a tax of four per cent. on incomes exceeding $2,000 in the case of unmarried men and widows and widowers without children, and exceeding $3,000 in the case of other persons. There is further a supertax, progressing from two per cent. on the amount by which an income exceeds $6,000 but does not exceed $10,000, up to 25 per cent. on the amount by which an income exceeds $100,000. In the case of companies the tax is four per cent. on incomes exceeding $3,000. The Business Profits War Tax Act of 1916 (*A. Y. B.*, 1916, p. 121) is amended by Chapter 6 which provides for a tax of 50 per cent. on profits in excess of 15 per cent. per annum but not exceeding 20 per cent. per annum, and a tax of 75 per cent. on profits in excess of 20 per cent. per annum. The Public Service Loan Act (Ch. 3) authorizes a loan not exceeding $100,000,000 in addition to sums remaining unborrowed of loans already authorized. Chapter 35 created the new offices of Minister of the Overseas Military Forces, Parliamentary Secretary of the Department of Militia and Parliamentary Under-Secretary of State for External Affairs. The Act remains in force only during the continuance of the war. A General Election was held on Dec. 17, with the result that the Union Government was sustained by a majority of over 45. In the voting the province of Quebec was almost solidly against and the province of Ontario almost solidly for the Government. The three maritime provinces returned a small adverse majority; but, with the exception of two or three constituencies, all four of the western provinces voted for the Union Government.

Provincial Legislation. — A more than ordinarily large body of new legislation was placed upon the provincial statute books during the sessions of 1917, the principal subjects of legislation having relation to the war, female suffrage, prohibition of the sale of alcoholic liquors, rural credit, labor questions, children, and the prevention of forest and other fires. Women are granted the right of voting in provincial and municipal elections on the same conditions as men in Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. Most of the provinces have passed strict temperance legislation during the last two sessions, and practical prohibition of the sale of alcoholic liquors, excepting for medical and scientific purposes, is now in force in all provinces except Quebec, while in Quebec provision is made for the reduction of licenses in cities, the prohibition of hotel bars after May 1, 1918, and of "treating." As in the United States, the question of rural credit has lately received considerable attention. In Ontario, Manitoba, Saskatchewan, Alberta and British Columbia, acts were passed in 1917 empowering the Provincial Governments to provide money for long-term loans to farmers.

Prohibition of Intoxicating Liquors. —In addition to the legislation referred to in the preceding paragraph, further important action was taken by the Dominion Government by the issue of an Order in Council on Dec. 22 prohibiting the importation into Canada of intoxicating liquor (defined as containing more than two and one-half per cent. of alcohol) on and after Dec. 24, 1917, unless purchased on or before that date for importation into Canada, and unless having been so purchased it is imported not later than Dec. 31, 1918. It is further provided that the transportation of intoxicating liquor into any part of Canada wherein the sale of such liquor is illegal shall be prohibited on and after April 1, 1918. The manufacture of intoxicating liquor within Canada will be prohibited on and after a date to be determined upon further investigation. These provisions were passed under the War Measures Act, 1914; and they are to remain in force during the war and for 12 months after the conclusion of peace.

Canada and the War.—On Nov. 15, the total number of recruits enlisted in the Canadian Expeditionary Force since the beginning of the war reached 441,862. During 1917 the Canadian forces, which consisted of four divisions and a considerable number of corps troops, gained special distinction. They bore a brilliant part in the victory of Vimy in April, and in the subsequent fighting. Up to Oct. 17 the casualties among the Canadian forces totaled 5,125 officers and 120,431 of other ranks; they included 1,015 officers and 20,263 of other ranks killed in action; 314 officers, 6,867 other ranks died of wounds; 81 officers, 1,473 other ranks died of diseases; 3,458 officers, 84,955 other ranks wounded; 120 officers, 2,566 other ranks prisoners of war; 96 officers, 3,248 other ranks presumed to have died; 41 officers, 1,059 other ranks reported missing. Canadian contributions for patriotic purposes have continued to swell in volume, and returns made up to March 31 show that the amounts actually paid had then reached $49,271,012. It is estimated that the total Canadian contributions for patriotic purposes connected with the war from Aug. 4, 1914, to March 31, 1917, are not less than $55,000,000, and that on Aug. 4, 1917, at the end of the third year of the war the total was between $60,000,000 and $70,000,000. An important work is now being carried out in Canada by the Military Hospitals Commission, established by Orders in Council of June 15 and Oct. 14, 1915, for the care of disabled soldiers, including their reëducation and vocational training. Not less than 29,000 returned soldiers have been dealt with by the Commission, and 113 hospitals and other institutions are under its control. Increased pensions to the dependents of deceased soldiers and to disabled soldiers went into operation on April 1, and the administration of pensions is in charge of a Board of three Pension Commissioners, appointed on June 3, 1916. Various economic measures connected with the war have been adopted, including the appointment of Mr. W. J. Hanna as Food Controller, without salary (June 21), and the regulation upon his recommendation of the sale and distribution of various food products. Margarine, hitherto prohibited in Canada, may now be imported and manufactured during the war only as from Oct. 3; prices for wheat have been fixed up to the end of the crop year on Aug. 31, 1918, the prices per bushel ranging up to $2.21 according to grade; wheat placed on the customs free list from April 20 has reciprocal effect by the admission of Canadian wheat free of duty into the United States.

Agriculture and Live Stock.—On the prairie provinces a serious drought, broken only just before harvest, caused the grain yield to be low and the straw short. Countervailing advantages were the excellent grading quality and the high price. Quebec experienced a cold, wet season, and nearly all crops were much below average. Ontario had a bumper harvest, and all crops, except corn and beans, gave excellent returns. The potato crop of Quebec was extraordinarily poor, and that of New Brunswick, one of the chief potato-growing provinces of the Dominion, was also below average. The average potato yield for the Dominion was one of the lowest on record, but the total yield, owing to the increased area planted, was considerably above the yields of the two previous years, and, added to the produce of vacant urban lots, removed apprehensions of any repetition of the previous shortage. The hay crop was again abundant.

Field Crops	1916 (000 omitted) acres	1917 (000 omitted) acres	1916 (000 omitted) bus.	1917 (000 omitted) bus.	1916 (000 omitted)	1917 (000 omitted)
Fall wheat	818	725	17,590	15,708	....	....
Spring wheat	14,551	14,031	245,191	216,022	....	....
All wheat	15,369	14,756	262,781	231,730	$344,096	$451,874
Oats	10,996	13,313	410,211	393,570	210,958	236,142
Barley	1,803	2,392	42,770	51,684	35,024	51,684
Rye	148	212	2,876	4,240	3,196	6,360
Peas	152	194	2,218	3,373	4,919	10,118
Beans	33	92	413	1,390	2,228	9,728
Buckwheat	342	396	5,976	8,217	6,375	9,860
Flax	658	920	8,260	6,873	16,890	20,618
Mixed grains	413	497	10,585	16,461	9,301	16,461
Corn for husking	173	303	6,282	9,177	6,747	9,177
Potatoes	473	657	63,297	79,892	50,982	81,355
Turnip, etc	142	218	36,921	63,451	14,329	29,253
			tons	tons		
Hay and clover	7,821	8,225	14,527	13,685	168,548	142,320
Fodder corn	293	297	1,908	2,104	9,396	10,901
Sugar beets	15	14	71	118	440	794
Alfalfa	99	110	287	262	3,066	3,041
Total	38,930	42,596	....	....	$886,495	$1,089,686

The table shows the estimated area, yield and value of the field crops of Canada for the two years 1916 and 1917. The total value of the crops for 1917 is estimated at $1,089,686,000, the first year that the crops of Canada have exceeded one billion dollars in value.

Farm Live Stock.—The following were the estimated numbers of farm live stock on June 15, 1917, as compared with the revised figures of 1916:

	1916	1917
Horses	3,258,342	3,412,749
Milch cows	2,833,433	3,202,283
Other cattle	3,760,718	4,718,657
Total cattle	6,594,151	7,920,940
Sheep	2,022,941	2,369,358
Swine	3,474,840	3,619,382

Manufactures.—A report of 1917 gave the following results of the Census of Manufactures for 1915 compared with 1905:

Items	1905	1915	Increase	Per cent.
Establishments	15,796	21,306	5,510	34.88
Capital	$846,585,023	$1,994,103,272	$1,147,518,249	135.54
Employees on salaries	36,496	52,683	16,187	44.35
Salaries	$30,724,086	$60,308,293	$29,584,207	96.29
Employees on wages	356,034	462,200	106,166	29.82
Wages	$134,375,925	$229,456,210	$95,080,285	70.76
Value of products	$718,352,603	$1,407,137,140	$688,784,537	95.88

Trade, Revenue and Finance.—The last two years have witnessed an extraordinary expansion of the trade of Canada, due almost entirely to the conditions created by the war. While for the fiscal year ended March 31, 1916, the aggregate trade of Canada, excluding coin and bullion, attained the record of $1,287,117,229, the corresponding value for 1916-17 was $2,024,542,003; so that in a single year the value of Canada's external trade has increased by 57 per cent. The significance of the increase may further be gauged by comparison with the first year of the war 1914-15, when the value was $916,888,821, and with the first year of the century, 1900-01, when the value was $372,209,837. Under the influence of this trade expansion the revenue on consolidated fund account rose for the fiscal year 1916-17 to the record total of $232,609,294, with a surplus of $84,001,951, enabling the Dominion to pay out of income all current and capital expenditure, all interest charges on the increased national debt, all pension outlays, and in addition to devote the sum of $60,000,000 towards payment of the principal of the war expenditure. In 1915-16, the revenue was $172,147,838, and the surplus $41,797,111. The net public debt of Canada stood at $879,186,298 on March 31, 1917, as compared with $615,156,171 for 1916. In March, a third war loan of $150,000,000 in the forms of bonds bearing interest at 5 per cent. and maturing on March 1, 1937, was issued at the price of 96 per cent. and was considerably oversubscribed. On Nov. 12 a fourth Canadian War Loan in the form of five, 10 and 20 year "Victory Bonds" in denominations down to $50 was issued at par, with interest at five and one-half per cent., and maturing on Dec. 1, 1922, 1927 and 1937. The subscriptions to this loan amounted to over $400,000,000.

Quebec Bridge.—After two accidents, one on Aug. 29, 1907, when 60 workmen lost their lives and 11 others were injured, and the other on Sept. 11, 1916, when 12 lives were lost, the hoisting into position of the central span of the bridge which is in the course of construction across the St. Lawrence about eight miles above Quebec city was accomplished successfully on Sept. 20, thus completing the structure.

Halifax Disaster.—On the morning of Dec. 6 a collision between a Belgian relief ship, the *Imo*, and a French vessel, the *Mont Blanc*, laden with powerful explosives, caused the explosion of the latter with disastrous results to the city of Halifax and the town of Dartmouth, Nova Scotia. The disaster is probably the worst of its kind in the history of the Dominion, and one of the worst ever known upon the American continent. A large part of Halifax, especially the northern part, was totally destroyed. It is estimated that in addition to those killed by the explosion 25,000 persons were rendered homeless and destitute and that the money loss was about $20,000,000. The latest estimate places the number of deaths at about 1,500. Heavy snowstorms on the days following the explosion caused great suffering among numbers whose houses had been destroyed. Relief from all parts of Canada and from the United States was promptly sent to Halifax, and relief funds were raised everywhere. The contributions include public appropriations by the United States of $5,000,000, by the United Kingdom of £1,000,000 and by Canada of $5,000,000.

Jubilee of Confederation.—Sunday, July 1, the fiftieth anniversary of Confederation, was appointed by Royal Proclamation of June 6 to be observed throughout Canada as a "day of humble prayer and intercession to Almighty God on behalf of the cause undertaken by the British Commonwealth and the Allies, and for those who are offering their lives for it, and for a speedy and enduring peace."

Commemorative services were also held in London and Paris. Dominion Day was celebrated on July 2, and at noon on this day at Ottawa a memorial tablet in the new Houses of Parliament, bearing the following inscription, was unveiled by the Governor-General in the presence of a large representative assembly:

> July, 1867-1917. On the fiftieth anniversary of the Confederation of British Colonies in North America as the Dominion of Canada, the Canadian Parliament and people dedicate this building then in process of construction after damage by fire, as a memorial of the deeds of their forefathers and of the valour of those Canadians who in the great war fought for the liberties of Canada, of the Empire and of humanity.

A commemorative postcard and postage stamp were also issued by the Dominion Government.

THE BRITISH EMPIRE

EDWARD PORRITT

THE UNITED KINGDOM

Parliament and Electoral Reform.—The most important task, outside of the measures necessary for the carrying on of the war, that confronted the British Parliament at the opening of 1917 was the passage of an act under which a new House of Commons could be elected.

In Aug. 1916, the House of Commons approved the setting up of a

Conference, representing not only parties and groups in Parliament, but also aiming really to represent the nation on the question of the electorate and the distribution of electoral power. The Speaker of the House, the Rt. Hon. J. W. Lowther, summoned and presided over the Conference, which consisted of members from both Houses. It began its work on Oct. 10, 1916, and continued it to the end of Jan. 1917, holding altogether 26 sittings.

The report of the conference was presented to the House of Commons in March. On May 15, a bill founded on its recommendations was introduced. The bill was divided into five parts and contained 33 clauses. The first part dealt with franchises; the second with registration; the third with costs of elections; the fourth with redistribution of seats; and the fifth with acts repealed or adopted. The bill swept away most of the qualifications for the franchise, and substituted residence or the occupation of business premises; provided for a limited degree of woman suffrage; and also provided that all pollings at a general election should take place on one day. It greatly limited, but did not end, plural voting, and it kept the university franchise, extending it to women graduates who had attained the age of 30 years. It also contained special clauses providing against the disfranchisement of any man on account of his absence, during the qualifying period for registration, on military or naval service. The plan for the redistribution of seats was not contained in the bill as introduced in May but was left to a Boundary Commission which did not finish its work until October.

The provisions under which votes were granted to women were, perhaps, the most controversial part of the bill. In the report of the Conference, the recommendations concerning woman suffrage represented the opinion of the majority; but there was a minority opposed to them, and this part of the bill was not considered as an agreed measure. In his speech of March 28, Mr. Asquith gave considerable attention to the question of the inclusion of women. He frankly acknowledged that he had in the past been opposed to woman suffrage, but that he had changed his mind on the subject. The women, he said, had worked out their own salvation during the war. The war could not have been carried on without them. Short of bearing arms in the field, there was hardly a service that contributed to the maintenance of the cause of the Allies in which women had not been at least as active and as efficient as men. Still more important in his opinion was the coming period of reconstruction after the war. The questions which would then arise in regard to women's labor, and women's functions and activities were questions on which he considered that it was impossible, consistently with either justice or expediency, to withhold from women the power and the right of making their voices directly heard. The House of Commons evidently agreed with Mr. Asquith for by a vote of 387 to 57, taken on June 19, the section granting votes to women was added to the bill.

The age limit for women voters was fixed at 30 years, and the residential qualification was not extended to women. A woman to be voter must be qualified as the occupier, as owner or tenant, of any land or premises, or as the wife of a man so qualified. The Conference estimated that between five and six million women would be enfranchised under this provision, and that the plan would include representatives of all classes. The most important class of women who would not secure representation would be working women living either at home or in lodgings and who were not occupiers of property, nor wives of occupiers. By an amendment to the bill, carried on Nov. 20, wives of occupiers were also added to the register of local government electors. Besides woman suffrage, there was a controversial section in the bill providing for proportional representation and an alternative vote in the case of more than two candidates' being nominated for one seat. There was little popular demand for this reform, as little educational work had been done in the constituencies on its behalf, and the provision was lost when the bill was in Committee. Two further amendments to the bill were carried in November. By one of them the voting age for all men on active service during the war was set at 19, and by the other men excused from military service as conscientious objectors were disfranchised.

The plan of the Boundary Commission for England, Wales and Scotland increased the membership of the House of Commons from 670 to 701, of whom England and Wales were to have 525 members, as compared with 495 in the present Parliament, and Scotland 73, as compared with 72. The number for Ireland was left at 103. The average unit of population per member was reduced in Scotland from 68,013 to 66,862, and in England and Wales from 77,526 to 68,600. In the London boroughs the unit was larger, being reduced only from 76,773 to 72,871. The five university seats in England and the two in Scotland were left untouched. The bill passed through its final stages in the House of Commons in December, and at the end of the year was awaiting action in the House of Lords.

The Cabinet and the Ministry.—There were several changes in the Ministry during 1917, but with one exception the War Cabinet remained the same throughout the year. The one change was the substitution of Mr. George Barnes for Mr. Arthur Henderson, who resigned in August owing to an acute difference of opinion in regard to British labor representation at the Pacifist Conference at Stockholm. The other five members of the War Cabinet were Mr. David Lloyd George, the Premier; Earl Curzon, Lord President of the Council and Leader of the House of Lords; Mr. A. Bonar Law, Chancellor of the Exchequer; Viscount Milner, and Sir Edward Carson. Between August 1914 and the end of 1917, 12 new government departments had been created to meet the exigencies of the war. The ministers in charge of these were: Lord Robert Cecil, Minister of Blockade; Mr. Winston S. Churchill, Minister of Munitions; Mr. John Hodge, Minister of Labor; Mr. George N. Barnes, Minister of Pensions; Dr. Christopher Addison, Minister of Reconstruction; Lord Rhondda, Minister of Food Control; Sir Joseph P. Maclay, Shipping Controller; Lord Rothermere, President of the Air Board; Mr. Guy Calthrop, Controller of Coal Mines; Sir Auckland Geddes, Director General of National Service; Sir Arthur Lee, Director General of Food Production; and Lord Emmott, Director of War Trade Department.

National Welfare.—The discovery that the English were not a healthy nation, and that this lack of robust health could be traced to neglect of the children profoundly stirred the country, when men were urgently required for the military and naval forces. A wide-spread movement for national health and welfare was the result. The movement showed itself in Parliament in the Education bill, introduced by Mr. H. A. L. Fisher, President of the Board of Education, in the promise of the establishment of a Ministry of Health, and in the announcement by Mr. W. Hayes Fisher, President of the Local Government Board, of the intention of the Government to bring in a bill dealing with maternity and infant welfare.

Mr. Fisher's Education bill was the most ambitious attempt to deal with national education since Mr. Balfour's bill of 1902. Its first care is for the welfare of the children. No child under 12 is to be allowed to work for wages. From 12 to 14 all children must attend school, and work is only to be allowed on Saturdays, Sundays and school holidays, between 6 A.M. and 8 P.M. and on school days from 4 P.M. to 8 P.M. All children are to be under the care of a school medical officer who may forbid unsuitable labor. The bill also provides for nursery schools for children between two and five years old, and for continuation schools to carry the children up to 18. There is an entire revision of the system of secondary education. Instead of combing out the children of unusual abilities and taking them practically out of the working classes, the system is aimed to raise the whole social level of English life, and, combined with the continuation schools, to give an outfit for life to every child in the country and to give to peculiar aptitudes the opportunities that are necessary for their full development. The heavy expenses that would be thrown on the local areas formed a strong objection to the bill in its first form and in October there was talk of dropping it completely. Mr. Fisher, however, induced the government to consent to much larger grants from the Imperial Treasury, a concession which removed the chief objection to the measure; and at the close of 1917, its chances of becoming law were good.

Another measure in the interest of national health which was under consideration by Parliament in 1917, but which had not become law at the end of the year, was an amendment to the criminal law, providing means of dealing more drastically with the social evil and venereal diseases.

Food.—The place of importance which was occupied in 1915 by munitions and in 1916 by the need of men for the forces, was taken in 1917 by the food question. Lord Devonport, who was Food Controller at the beginning of the year, made his first order in January. This order affected the milling of flour and the use of sugar, and fixed a maximum price for potatoes. During the year the difficulties in connection with the food supply of the nation increased with the shortage of shipping, and almost every staple article of food was taken under the control of the Food Minister. At the beginning of November, Lord Rhondda, who had succeeded Lord Devonport on his resignation on account of ill-health, put into force an order fixing the maximum price of tea at four shillings a pound, raising the price of milk from sevenpence to eightpence a quart, and slightly lowering the price of beef. At no time in the year was there anything in the nature of a food famine, but the shortage of tea and sugar was acutely felt by the people, and the high price of milk was found to be adversely affecting the health of the babies and little children.

At the end of the year there was much complaint and uneasiness over the bad system of distribution of food, which entailed waiting in queues at the shops and stores for the chance of purchasing meat, butter, tea and other provisions.

Finance.—The budget for the fiscal year ending March 31, 1918, was introduced in the House of Commons by Mr. A. Bonar Law, Chancellor of the Exchequer, on May 2. It was Mr. Law's first budget, as his tenure of the office of Chancellor only dated from Dec., 1916, when he succeeded Mr. Reginald McKenna. Mr. McKenna's estimate of the total expenditures on war and on civil govern-

Customs, on basis of 1916-17 taxation	£64,750,000
Additional taxes	6,000,000
Excise on former basis	34,850,000
Additional taxes	100,000
Total	105,700,000
Estate and inheritance duties	£29,000,000
Stamps	8,000,000
Land tax	650,000
House duty	1,950,000
Income tax, including super tax	224,000,000
Excess profits duty with additional duty	200,000,000
Land values duties	400,000
Total	464,000,000
Postal service	244,200,000
Telegraph service	3,250,000
Telephone service	6,250,000
Crown lands	600,000
Receipts from loans, etc.	7,500,000
Miscellaneous	27,100,000
Total receipts from non-tax revenue	68,900,000

The estimated expenditures were:

National Debt Services	£211,500,000
Payments to local taxation accounts	9,700,000
Other Consolidated Fund Services	1,695,000
Army (token vote)	15,000
Navy (token vote)	17,000
Ministry of Munitions (including ordnance factories)	1,000
Civil Services—Old age pensions	12,200,000
Ministry of Labor, insurance, etc.	8,542,000
Other civil services including education	40,482,000
Customs and excise, and inland revenue dept.	5,249,000
Post Office services	25,980,000
Total	315,381,000
Votes of Credit	1,975,000,000
Total estimated expenditures	£2,290,381,000

ment, as presented to the House on April 4, 1916, was £1,825,380,000. The actual expenditures for the year were £2,198,113,000. The estimated revenue for the year was £502,275,000. The actual receipts were £573,428,000. There was thus a deficit for the year 1916-17 of £1,624,685,000 which had been met by loans, and an excess of expenditures over estimates of £372,733,000. This excess, Mr. Law explained, was largely due to two causes—the increased amount spent on munitions and the increased advances to the Allies and the Dominions. Both these increases were necessary for the winning of the war. As regards the advances to the Allies and the Dominions, which had exceeded the estimates by £100,000,000, the Chancellor stated that there was no increasing strain on the British Exchequer from the Dominions, as they had not only the will but the power to supply themselves from their own resources. The total advances to the Allies in 1916-17 were £540,000,000, and to the Dominions £54,000,000. From the beginning of the war to May, 1917, the total amount advanced to the Allies was £828,000,000 and to the Dominions £142,000,000, making a total of £970,000,000.

The revenue for the year 1917-18 from all sources was estimated at £638,600,000. The sources of the revenue are shown on the preceding page.

Only three additions were proposed by Mr. Law to the taxes. These were in the taxes on entertainments, tobacco and excess profits. In regard to the tax on entertainments, Mr. Law fully recognized the value to the nation in its time of strain of amusements, which were already yielding a tax revenue of £3,000,000. The additional tax would chiefly fall on complimentary tickets and was expected to yield £100,000. The new tax on tobacco was expected to yield £6,000,000. As at first proposed, it amounted to 1s. 10d. per pound, but there was so much opposition to this large increase that it was afterwards cut down to 11d., making the tax on tobacco sold in Great Britain six shillings and fivepence per pound. The excess profits tax was raised from 60 to 80 per cent., which it was estimated would bring in a revenue of 20 millions sterling.

The fundamental principle of British war finance, laid down by Mr. McKenna while he was Chancellor of the Exchequer, was fully adopted by Mr. Bonar Law in making his budget of 1917. This was that the revenue, apart from borrowings, should continue to show a balance over what would be the permanent charges on the Exchequer, if war expenditure came to an end. On this basis enough had to be added to the tax revenue to compensate for the increased charges due to borrowings in the year. In carrying out this policy, Mr. Bonar Law stated that of the total expenditure during the war of £4,318,000,000, up to May, 1917, £1,137,000,000 had been provided out of revenue. This was fully 26 per cent. of the whole war cost, and Mr. Law assured the House that there was no other belligerent country which by any possibility could present a figure so satisfactory.

Cost of the War.—Some explanation of the cost of the war was made by Mr. Bonar Law on the occasion of asking the House of Commons for a vote of credit on Oct. 30. This was the fourth vote asked for during the year. It was for £400,000,000, a vote which brought up the total for the year to £1,900,000,000. This would be sufficient to provide the necessary funds up to the first week in Jan., 1918. Another vote of credit, he explained, would be asked before the end of the year, but that would be to provide funds for 1918. The figures from July 22 to Sept. 29 showed an average daily expenditure of £6,414,000, or approximately an excess of one million sterling a day over the budget estimates of May 2. From the beginning of the financial year up to Sept. 29, the daily expenditure was £6,648,000 or an excess of £1,237,000 a day.

These alarming figures, he continued, were, however, not so serious as appeared. The total increase in expenditure over the budget estimate for the half year amounted to £222,500,000. From this must be deducted as recoverable £61,500,000 additional loans to the Allies and Dominions. An item of £24,000,000 represented money advanced to the Dominions in the form of expenditures on the Dominion armies in Great Britain, which were borne by the British Government, but which would be repaid. Another large item of £74,500,000 represented expenditure on raw materials, such as wool, hides, timber and food stuffs, that was in the nature of a business transaction, and that would come back to the Treasury. With these amounts deducted, the total real increase for the half year was £43,500,000, or £239,000 a day, instead of a million and a quarter. Mr. Law warned the House of Commons that there would be a further increase before the end of the year owing to the higher price of bread and the increase in pay to the soldiers and sailors.

At the time Mr. Law asked for this fourth vote of credit, he stated that the National Debt of Great Britain stood at between £4,900,000,000 and £5,000,000,000. From this he was entitled to deduct the amount advanced to the Allies and the Dominions. This was £1,100,000,000 to the Allies and £180,000,000 to the Dominions. With the gift from India this brought down the total to £3,674,000,000. At the beginning of the war the debt was £645,000,000, so that the increase of debt due to the war was approximately £3,000,000,000. The fifth vote of credit for the year of 1917 was asked from the House of Commons by Mr. Bonar Law on Dec. 12. It was for £550,000,000, thus bringing up the amount voted for the war in 1917 to £2,450,000,000. The average daily expenditure during the period between Sept. 29 and Dec. 1 was £6,794,000. The excess over the budget estimates had increased in this period from £1,237,000 to £1,383,000. In asking for this vote of Dec. 12, Mr. Bonar Law made a forecast of considerably increased taxation for 1918.

The great increase in expenditure in 1917 alarmed the House of Commons, and brought about the appointment of a Select Committee to inquire into Expenditure. This Committee reported at the beginning of October. It estimated that with the continually increasing burden of debt charges, the increase in the national debt might reasonably be expected to amount to £1,000,000,000 for each six months that the war lasted. The Committee recommended more attention to cost, and especially scored the system of permitting each Government Department to do its buying independently of other Departments, which had resulted in competition between Departments and the consequent raising of prices. There was no indication in the report that expenditures could be greatly reduced by the reforms suggested.

The Empire Cabinet.—A step of enormous importance to the future of the British Empire was taken at the close of 1916, when Mr. Lloyd George's newly organized administration sent invitations to the Premiers of all the oversea Dominions to "attend a series of special and continuous meetings of the War Cabinet, in order to consider urgent questions affecting the prosecution of the war, the possible conditions on which, in agreement with our Allies, we could assent to its termination, and the problems which will then immediately arise." The first meeting of the Imperial War Cabinet was held at Westminster on March 20. Canada was represented by Sir Robert Borden, the Prime Minister; Mr. Robert Rogers, Minister of Public Works; and Mr. J. D. Hazen, Minister of Marine; Newfoundland by Sir Edward Morris, the Prime Minister; New Zealand by Mr. W. F. Massey, the Prime Minister, and Sir Joseph Ward, the Minister of Finance; South Africa by General Smuts, Minister of Defence, and India by Mr. Chamberlain, Secretary of State for India, advised by Sir James Meston, Lieutenant-Governor of Agra and Oudh, Sir S. P. Sinha, first Indian member of the Viceroy's Executive Cabinet, and the Maharajah of Bikanir, representing the Ruling Chiefs. Political complications at home prevented the attendance of representatives from Australia.

The Imperial War Cabinet held 14 sittings, and while in session, its overseas members had access to all the information which was at the disposal of the British Government, and occupied a status of absolute equality with that of the members of the British Cabinet. In summarizing its results to the House of Commons in reply to a question from Mr. McKenna, Mr. Lloyd George characterized the experiment as "a complete success." "The Imperial War Cabinet," he continued, "was unanimous that the new procedure had been of such service, not only to all its members but to all the Empire, that it ought not to be allowed to fall into desuetude. Accordingly, at the last session, I proposed formally on behalf of the British Government, that meetings of an Imperial Cabinet should be held annually or at any intermediate time when matters of urgent Imperial concern require to be settled, and that the Imperial Cabinet should consist of the Prime Minister of the United Kingdom and of such of his colleagues as deal especially with Imperial affairs; of the Prime Minister of each of the Dominions or some specially accredited alternate possessed of equal authority; and of a representative of the Indian people to be appointed by the government of India. This proposal met with the cordial approval of the overseas representatives, and we hope that the holding of an annual Imperial Cabinet to discuss foreign affairs and other aspects of Imperial policy will become an accepted convention of the British constitution."

The institution in its present form, Mr. Lloyd George added, was extremely elastic. It had grown not by design but out of the necessities of the war. "To what constitutional developments this may lead," he continued, "we did not attempt to settle. The whole question of perfecting the mechanism for continuous consultation about Imperial and foreign affairs between the autonomous nations of an Imperial Commonwealth will be reserved for the consideration of that special conference, which will be summoned as soon as possible after the war, to readjust the constitutional relations of the Empire. We felt, however, that the experiment of constituting an Imperial Cabinet in which India was represented had been so fruitful in better understanding and in unity of purpose and action that it ought to be perpetuated, and we believe that this proposal will commend itself to the judgment of all the nations of the Empire."

Labor.—The year 1917 was marked by much labor unrest in Great Britain. There was no opposition by organized labor to the vigorous prosecution of the War, but there was uneasiness over what appeared to trades unionists to be backward steps in regard to the position of the working man. The causes of the trouble were summarized by Mr. George Barnes, the Labor member of the War Cabinet, in a review of "Labor and the War" published on Aug. 4, 1914, the third anniversary of Britain's entrance into the War. "Such trouble as has arisen in the industrial field," he wrote, "has in the main, not been on the issues of the war, but has arisen on domestic and economic grounds. Labor was called upon temporarily to give up privileges and rights which had been fought for and won. It did so in the interests of the nation, but it has since felt that its surrender to the nation has been exploited for private purposes. Labor had already knowledge of inflated profits and experience of inflated prices. It had been irritated by inconsiderate and centralized administration, and somewhat unnerved by increasing and exacting work. The proposal to legislate for the purpose, as it seemed to working men, of establishing new conditions which might be used for private profit came as added irritation to existing irritability."

At the time that Mr. Barnes wrote the foregoing, a Royal Commission, organized in June, 1917, had been making an investigation into labor conditions and the causes of labor unrest. Before commencing its work, the Commission was addressed by Mr. Lloyd George who spoke sympathetically of the trials that labor was undergoing. Mr. Lloyd George asked for separate reports whenever these were ready, but stated that the Government did not intend to wait for reports, but would remedy grievances and correct stupidities and errors whenever its attention was called to them.

The work of the Commission was done promptly and sympathetically, and a summary of the conclusions arrived at in regard to the grievances was presented to the Premier on July 17. Among the causes of discontent noted were: the high cost of food; restrictions on personal freedom and on the right to exchange work when better opportunities offered; lack of confidence in the promises of Government that ante-war trade union conditions should be restored; delay in the settlement of disputes by government tribunals; lack of housing in certain areas; industrial fatigue; inconsiderate treatment of women in Government service, and in munitions factories (some women still were receiving wages as low as 13s a week); and delay in granting pensions to soldiers.

A movement for better representation of the workers in parliament was set on foot in the second half of 1917. A programme of national and industrial reconstruction was drawn up and an amalgamation effected between the trades unionists and the coöperators. It was proposed that conditions of membership in the Labor Party should be greatly liberalized, and plans were presented for the contesting of many seats by Labor representatives in the election expected in 1918.

In the summer there was a plan on foot to hold an International Labor and Socialist Conference at Stockholm. The plan was favored by Mr. Arthur Henderson who was the Labor member of the War Cabinet. A special conference of the Labor Party was held in London on Aug. 10, and by a vote of 1,846,000 to 550,000 it was resolved that British delegates should attend. This decision was disapproved by the Government, and Mr. Lloyd George claimed that Mr. Henderson had deliberately misled the Labor representatives in regard to the attitude of Russia, representing the Russian Government as strongly in favor of the conference, when in fact a telegram had been received from Petrograd dissociating the Government from any share in the conference. Mr. Henderson at once resigned from the Cabinet. At the Trades Union Congress which was held at Blackpool in September, Mr. Henderson made an attempt to define his position and to defend the project of the Stockholm Conference, which had proved abortive. He was well received by the Congress, but there was no indication in any of the resolutions of any desire on the part of British organized labor for the negotiation of a premature peace.

Ireland.—Early in 1917 a demand was made by the Irish Nationalists that the Home Rule Act, which was passed in 1914, but the operation of which was suspended during the war, should immediately be put into force. There was, however, the insuperable difficulty of Ulster, the coercion of which was unthinkable, in view of the loyalty of this part of Ireland to the war and its unwillingness to accept separation from Great Britain. The reply to the Irish demand was given by Mr. Lloyd George, the Premier, in the House of Commons, on March 7. "We must face facts," Mr. Lloyd George insisted. The fundamental facts, in his opinion, were that centuries of ruthless and often brutal injustice had driven hatred of British rule into the very marrow of the Irish race; and that in the northeastern part of Ireland the population was as hostile to Irish rule as the rest of Ireland was to British rule. These fundamental facts raised two questions. Were the people of Great Britain prepared to confer self-government on those parts of Ireland that unmistakably demanded it? Were they prepared to force the population of the northeastern corner to submit to government by a population with which they were completely out of sympathy? Mr. Lloyd George answered the first of these questions in the affirmative and the second in the negative. As the Nationalists refused to consider any plan of settlement that called for a partition of Ireland, the question appeared to be deadlocked.

An attempt to break the deadlock was started on May 16, when the Prime Minister sent a letter to Mr. Redmond, the leader of the Nationalist Party, and a copy to Sir John Lonsdale, the acting leader of the Ulster Unionists. In the letter the Government proposed to put immediately into force the Home Rule Act, but to exclude from its operation the six counties of Northeast Ulster, and to set up a Council for Ireland to be composed of both Ulster and Nationalist members. Other proposals called for a review of the financial sections of the Home Rule Act and for the setting up of a conference to suggest any alterations in the government scheme upon which it might decide. The specific scheme was rejected by the Nationalists; but both Nationalists and Unionists in Ireland favored the proposal of a conference or convention. Consequently on May 21, the Prime Minister announced to the House of Commons that the Government had decided to summon a convention of representative Irishmen to submit to the British government and parliament a constitution for the future government of Ireland within the Empire. The proposal was well received from all parts of the House, and while there was much criticism of it in the Nationalist Press, the Irish people seemed willing to give the convention a fair chance of coming to some satisfactory agreement.

Invitations were at once sent out to all the political parties in Ireland, and on June 11, Mr. Lloyd George announced in the House of Commons that they had given their assent to the invitation and that the Convention was to be summoned at once. In order that the Convention might represent the everyday life of the country the Premier stated that each county council and each county borough was invited to send its chairman, and that the chairmen of the urban districts in each of the four provinces were to select two members of the Convention. "The Government thought," Mr. Lloyd George continued, "that the churches ought to be invited, and we expect the presence of four representatives from among the Roman Catholic bishops, together with the Primate, Dr. Crosier, and the Archbishop of Dublin, Dr. Bernard, as representing the Protestant Church of Ireland, and Dr. John Irwin, the Moderator of the Irish Presbyterian Assembly. We shall invite as spokesmen of commerce, the chairmen of the chambers of commerce of Dublin, Belfast and Cork, and representatives of trades unions in Belfast—in all, five representatives of labor." As regards the representation of the political parties the Premier stated that Mr. Redmond and Sir J. Lonsdale were each to send the names of five representatives, and Mr. W. O'Brien, leader of the Independent Nationalists would be asked to suggest two names. The Irish representative peers would be invited to name two of their number, and the Irish Unionist Alliance, the Unionists of Southern Ireland, was to have five representatives. The Sinn Fein organization had signified that it would not enter the Convention, but five places were to be reserved for its representatives in case it should revise its determination. In order not to leave unrepresented any portion of the Irish people the Government reserved the right to nominate 15 members of the convention from among leading Irishmen of all sections. The whole number of the convention would be 101, and the Government would nominate a chairman and submit his name to the King for approval. In order to give the convention a reasonable chance of success, it would sit behind closed doors, and the Government undertook that if any substantial agreement was arrived at as to the character and scope of a constitution, it would accept the responsibility for taking all necessary steps in order to enable the Imperial Parliament to give legislative effect to the conclusions of the Convention.

Sir Horace Plunkett was selected as chairman of the convention. Its earlier sittings were held in Dublin; in September it adjourned to Belfast. As all sessions were behind closed doors little was made public concerning the plans under discussion. The attendance was large and regular, and it was officially announced from time to time that the convention had under consideration several draft schemes of government based on the dominion principle.

The general condition of Ireland throughout 1917 was highly prosperous. There was no lack of labor for the farms, as Ireland was not subject to conscription, as were England and Scotland. The yields of the crops were good, and prices were high, a condition of things that made the large numbers of small proprietors averse to anything that savored of revolution. Nevertheless the Sinn Fein organization spread widely over the country. Three Sinn Fein candidates were returned to the House of Commons in by-elections, and there were sporadic outbreaks of Sinn Fein sedition. The success of the Sinn Fein in increasing its membership was attributed by the correspondent of the *London Times*, writing on Aug. 28, to the desire of the countryside to avert what it regards as the menace of conscription, and to the hope that Sinn Fein would sooner or later evolve a reasonable policy of national reform.

The Isle of Man.—Long continued friction between the House of Keys of the Isle of Man and the Governor led to the presentation of a petition by 6,057 residents of the island to the British Parliament. The petition was presented on July 29. It complained of "an undoubted attempt to crush a constitutional and political agitation through the Manx law courts" which would lead to civil disturbance, and it prayed for the appointment of a new governor. The petition also pointed out that a bill passed by the Manx parliament taxing food and tobacco, etc., would be presented to the House of Commons for approval, and it prayed the House to withhold its sanction until redress, retrenchment, reform and the appointment of a new governor had been secured. As an alternative it was suggested that the constitution of the island should be suspended, that direct taxation on the wealth of the island should be imposed by parliament, and that the constitution should be restored in an amended form only when the official and wealthy classes in the island had proved their willingness to bear their own burden and do their duty towards the poorer classes. It was also suggested that during the interregnum, if it should occur, a representative from the island should sit in the British Parliament, so that the people of the island might be brought into direct touch with the Imperial Government. Stress of other business prevented any action's being taken on this petition, although there was a general feeling that many of the complaints were well founded.

THE OVERSEAS DOMINIONS[1]

India.—Some progress was made in 1917 towards the reform of the government of India and the satisfaction of the aspiration of the moderate and constitutional Indian reformers. At the end of January the Royal Commission on the Public Services in India presented its report. This Commission was appointed in 1912, with Lord Islington, then Governor of New Zealand, and later Under-Secretary of State for India, as chairman. It assembled at Madras on the last day of 1912, and continued in session either in India or in London, with such intervals as were necessary, until the report was signed on Aug. 14, 1915. At that time, it was thought better to withhold publication of the report in order to avoid public discussion of it during the war. By the beginning of 1917, however, the Government had come to the conclusion that the advantages that would ensue from making public the recommendations of the Commission would outweigh any inconvenience that might arise from the publication of the report during the continuance of the war.

There were three Indian members of the Commission, the most illustrious of whom was Mr. Gokhale, who died in Feb. 1915, before the report was signed. Mr. M. B. Chaubal, a member of the Bombay Government signed the report but the third Indian member, Mr. Abdur Rahim, Judge of the Madras High Court, was the only one of the 10 surviving members of the Commission to refuse to sign. He supported most of the principles adopted by the Commission and many of its conclusions, but preferred to present a long minute of his own drawing up. There were also some reservations on the part of other members of the Commission, but the general unanimity was both remarkable and hopeful.

The recommendations of the Commission were largely concerned with plans for opening the civil service of

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[1] Except Canada, covered in a separate article *supra.*

India more freely to Indians without breaking down the standards and safeguards which have been erected. There has long been complaint of the rule under which examinations for the higher positions in the Indian Civil Service are held in England, and in 1893 the House of Commons passed a resolution calling for simultaneous examinations in India and England. This plan was rejected by the Secretary of State for India, and it was not recommended by the Commission. There was, however, in the report a provision by which "statutory natives" of India should be admitted to the higher posts of the service to a minimum number equivalent to 25 per cent. of the whole service. The method proposed was by nomination by the Secretary for India, on the advice of the Indian Government, from among the graduates of the Indian universities, and by competitive tests open to candidates recommended by a committee in touch with the educational interests of each province. The police service is at present officered entirely by men of European descent appointed after competitive examinations in London. The Commission recommended that Indians educated in the United Kingdom should be admitted to the examinations and that from 10 to 20 per cent. of the superintendentships should be filled by promotion of Indians in the provincial police services. There were recommendations in favor of improving the facilities for university education in India and of the admission of Indians more freely to professorships in the colleges and universities. The Commission did not adopt one of the principles for which Indian reformers have been struggling—that of equal pay to Europeans and Indians doing the same work, whether recruited in England or in India. The rule that officers promoted in the service in India should receive only two-thirds as much salary as men appointed to similar posts directly from Great Britain has been one of the sources of Indian discontent. The Commission recognized the obvious advantage of equal pay for equal work, but considered it unjust to burden India with the numerous large salaries that the rule would impose. It laid down the principle that the government should pay so much, and so much only, as is necessary to obtain recruits of the right stamp and to maintain them in such a degree of comfort and dignity as will shield them from temptation and keep them efficient for the term of their service. On this principle it recommended that salaries to be paid to Europeans and Indians respectively should be settled by each service separately and not on any general consideration of race or place of recruitment.

India's participation in the Imperial War Cabinet has already been noted. Mr. Austen Chamberlain, who was then Secretary for India, stated on May 24 that the Imperial War Conference had had under consideration the position of Indians in the Empire as distinct from the position of India itself. The recruitment of indentured labor in India had already been stopped, and it would not be revived. In relation to the self-governing Dominions the representatives of India recognized the right of each Dominion to settle its own immigration laws, whether as regarded immigrants from Asia or from Europe, and they did not claim an unrestricted right of settlement for Indians. What they asked was that such settlement should be on a footing of reciprocity; that British Asiatics should be treated at least as favorably as alien Asiatics; that facilities for travel and study as distinct from settlement, should be freely given, and that sympathetic attention should be given to the condition of Indians who had already been permitted to settle in the Dominions.

In August Mr. Montagu succeeded Mr. Chamberlain as Secretary for India, and one of his first announcements was that he intended to visit India in the winter of 1917-18. He also stated to the House of Commons that the policy of the government, with which the government of India was in complete accord, was that of increasing association of Indians in every branch of the Administration and the gradual development of self-governing institutions with a view to the progressive realization of responsible government in India as an integral part of the British Empire. Substantial steps in this direction, Mr. Montagu continued, had already been taken, and the Government had also decided to remove the bar that precluded the granting of commissions to Indians in the Army, and nine Indian officers who had served with the native Indian forces and had been recommended for commissions were to be given the rank of commissioned officers in the British forces.

In 1917 India made a contribution of £100,000,000 towards the cost of the war. This was financed partly by a war loan in India and partly by taking over a portion of the British National debt. In addition there were further war gifts from the ruling princes. The Nizam of Haidarabad gave £10,000 for anti-submarine work, Maharajo Scindia gave £66,000 for aeroplanes, ambulances and motor transport, the Gaekwar of Baroda gave £33,000 for aeroplanes; the Maharaja of Mysore made a gift of £400,000 and numerous chiefs made smaller contributions.

Australia.—From January to the beginning of May, 1917, the political situation in Australia was disturbed and uncertain. The defeat of the measure for conscription in October, by a vote of 1,146,000 to 1,085,000, showed that the hold of the Premier, Mr. William M. Hughes, was shaken. Mr. Hughes had made this measure peculiarly his own, and had campaigned the country in its favor. His own party, the Labor Party, was in opposition to the measure, and it expelled Mr. Hughes and the members who voted with him from its ranks. This caused a division in the party—the majority following the lead of Mr. Frank G. Tudor, while a minority remained faithful to Mr. Hughes. As the Administration was no longer supported by a majority in Parliament, Mr. Hughes resigned as Premier. The Liberals, who were led by Mr. Joseph Cook, were unable to form an administration; and Mr. Hughes again became premier, with a coalition ministry formed of Liberals and his own section of Labor members. The reorganization was completed towards the end of February, and Mr. Hughes was anxious to go to England to attend the meetings of the Imperial Cabinet. The term of the Parliament was, however, drawing to an end, and in order to avoid a general election a motion was introduced asking the Imperial Parliament to extend the lifetime of Parliament which by the constitution is limited to three years. The motion passed by a large majority in the House, but was rejected by a majority of two in the Senate.

The general election was held on May 5. It resulted in the return of 35 Liberals, 15 Hughes-Labor men, and 25 Tudorites. The Hughes Labor men and the Liberals—the Nationalists, as they now termed themselves—had thus a majority of 25 in the Lower House. The term of each Senator is six years, and only half the Senate is reëlected at each general election. After the 18 new senators were chosen, the Hughes Administration had a majority of 10 in the Senate—Liberals 10, Hughes-Labor men, 13, and Tudorites 13. During the campaign Mr. Hughes maintained that, although for the present he accepted the verdict of the people against conscription, he would, if returned to power, reserve to himself the right to refer the question again to the people, especially in view of the fact that the majority against the measure had been so small. He fought the campaign on a "win the war" platform, and on his return to office he did all in his power to make Australia a strong factor in the Empire.

In December, Mr. Hughes's new conscription measure was submitted to a referendum of the voters. It provided for the filling of the ranks by means of a ballot of single men only between the ages of 20 and 44. It was defeated by a vote of 1,072,000 to 889,000. The soldier vote was 23,000 in favor of the bill to 32,000 against it. As a result of this defeat Mr. Hughes's position as Premier at the close of the year was uncertain.

Up to the end of 1917 only indirect pressure had been used to obtain enlistments. One form of this pressure was the single men's tax which was incorporated in the Budget for 1917-18. Under this tax single men and widowers, without children, between the ages of 21 and 45, who have not enlisted in the Australian Imperial forces must pay 10 per cent. of their taxable income in addition to the ordinary income tax. Sir John Forrest, the Federal Treasurer, in announcing this new tax, estimated that it would bring in £500,000 in the 10 months from Sept. 1917 to June 1918, and stated that the money would be used for the repatriation of the soldiers. A war profits tax which was estimated to yield £1,000,000 was also imposed in the 1917 Finance Act.

Australia was very prosperous during the year 1917. Some of the trade formerly held by Germans was secured by Americans, but much of it went to the Japanese whose exports to Australia have increased since the beginning of the war. The last link to the Australian transcontinental railway was completed in Oct., 1917. The line runs from Kalgoorlie to Port Augusta, and establishes through connection between Perth, Adelaide, Melbourne and Sydney, across the Continent from west to east. Work on the eastern end of the line was begun in Aug., 1912, and at the Kalgoorlie end about six months later. The line is 1,060 miles long and forms a link in a system 3,467 miles in length. The best trains are to make the whole journey in five days and 14 hours, and the line is expected to shorten the time taken by the mails to and from Great Britain by two days and a half.

The Dominion of New Zealand.—The great prosperity of New Zealand in spite of war conditions may be judged from the fact that Sir Joseph Ward, the Dominion Treasurer, when he presented the Budget to Parliament in August, stated that there was a surplus of revenue overestimated receipts of £4,308,777. In the previous year there had been a balance of £2,166,007, making a total balance on March 31, 1917, of nearly £6,500,000. The largest increases in revenue had come from customs and excise duties and from income tax returns. Income tax receipts had increased from £1,392,119 in 1915-16 to £4,262,126 in 1916-17. The war profits tax levied in 1916 had not proved productive and was abolished. The difficulty of ascertaining the war profits, and the elaborateness of the machinery required had made it unprofitable to collect the tax. In its place it was proposed to levy a progressive income tax to yield £1,600,000, and a progressive tax on unimproved land values, with an exemption of £1,000 when the unimproved value did not exceed £3,000, the exemption diminishing by one pound for every two pound increase in value until it disappeared at £5,000 value. The total revenue for the year was estimated at £17,250,000. War expenditures from the beginning of the war to June 30, 1917, were roughly estimated at £28,500,000. Current war expenditure for the year 1917-18 was estimated at £1,900,000. With every reënforcement sent overseas the expenditures increased, and the expenditures for 1917-18 were estimated by Sir Joseph Ward at £24,000,000. A loan of £22,000,000 was needed for the current year. The first installment of this loan was raised in August and September. The Government asked for £12,000,000 but in less than three weeks this loan was oversubscribed by one third, and £16,000,000 were taken up by the people. The previous loan, which closed on Aug. 20, 1916, was also oversubscribed. Within 13 months the people of Australia provided more than £30,000,000 for war purposes. Like Australia, New Zealand is preparing for the repatriation of her soldiers, and has allotted 309,092 acres and a sum of £2,000,000 for the settlement of returned men.

CONTINENTAL EUROPE AND ASIA

Willis Fletcher Johnson

AUSTRIA-HUNGARY

Austria began the year with the cabinet which had been formed in December, 1917, with Count Clam-Martinic as Prime Minister, and for a time a tranquil course was pursued. On May 30 the Emperor convened the Parliament, for the first time since the war began, against the strong opposition of the German element, in order that it might give much-needed attention to the economic, social and financial problems which were oppressing the nation. The result was trouble. The 78 Poles in the Chamber refused to vote the budget, and in consequence on June 19 the Ministry resigned. Dr. von Seydler, who had been Minister of Agriculture, thereupon formed a new cabinet with himself as Prime Minister and Minister of Agriculture; Count von Toggenberg, Interior; Dr. Gwicklinski, Education; Dr. Schauer, Justice; Dr. von Wimmer, Finance; Baron von Banlans, Railways; General von Birkenstetten, Defense; and Messrs. Matapa, Commerce; von Hamann, Public Works; and Hoefer, Food. Later, Count Silvatatsuca was made Minister of Agriculture.

The scarcity of food caused untold distress throughout the Empire, and provoked many violent outbreaks. Early in June a widespread revolt against Austrian rule occurred in Bohemia, with much rioting and bloodshed.

A cabinet crisis occurred in Hungary on May 23, when the "iron man," Count Tisza, leader of the pro-German party, resigned his place as Prime Minister because of his disagreement with the King's policy of franchise reform which the King had announced in his speech from the throne at the opening of Parliament. Because of the Prime Minister's opposition to the reforms, widespread strikes and other demonstrations occurred. The veteran Count Julius Andrassy, a former Prime Minister and an Advanced Liberal, thereupon organized a new Cabinet, intended to execute the King's policy; but it lasted only a fortnight, and on June 15 Count Moritz Esterhazy became Prime Minister with a coalition cabinet. This body included Count Albert Apponyi, Count Theodore Batthyandi, Count Aladar Zichy, and William Vazsony—representatives of all the chief parties—and was committed to the policy of franchise reform. The Parliament declined, however, to support the policy formulated by this ministry, and another crisis occurred. Count Moritz Esterhazy resigned on Aug. 20, and was succeeded by a former Prime Minister, Dr. Alexander Wekerle, who proceeded to organize not only a Cabinet but also a new political party to support it, in which he included the followers of Count Apponyi, Count Andrassy, and William Vazsondi. He shrewdly coupled with his franchise policy a policy of peace, and so strengthened his position that on Dec. 23 he was emboldened to introduce an electoral reform bill which would give an equal, direct and secret ballot to every citizen, male or female, 24 years of age and able to read and write, with transportation to and from the polling place at state expense. A new division of electoral districts was also proposed.

Hungary has suffered much from food scarcity and industrial depression, while the decline of the birth-rate has caused much concern. In April there were some violent demonstrations amounting to organized revolts, and Budapest and 25 other municipalities were placed under martial law.

The common external affairs of the Dual Realm have been administered throughout the year by the royal and imperial Foreign Minister, Count Czernin von Chudenitz, a statesman of German and Bohemian origin. Early in November the Ausgleich, or compact between Austria and Hungary, was renewed unchanged for a term of years, an achievement which was regarded with little favor by the Jugo-Slavs.

FRANCE

The year began in France with the Briand Cabinet still apparently quite secure in office. It had been constituted in Oct., 1915, and had been reorganized in Dec., 1916, without a crisis (*A. Y. B.*, 1916, p. 134). On March 14, however, General Lyautey resigned his portfolio as Minister for War, chiefly because he would not brook interpellations and criticisms in the Chamber of Deputies. His place was not filled, but three days later the Prime Minister, Aristide

Briand, presented the resignations of himself and all his colleagues, because of attacks which had been made upon his economic policy. This caused no crisis nor excitement, and on March 19 a new Cabinet was formed, chiefly by reorganization of the old. The Prime Minister was the veteran Alexandre Ribot, who had first entered a Cabinet 39 years before, who had several times before been Prime Minister, and who had been Minister of Finance under Briand. The most noteworthy new accession to the Ministerial ranks was that of Paul Painlevé, a distinguished scholar, professor of mathematics and scientist, as Minister for War. On Aug. 4, for the first time since the beginning of the war, the Socialists in the Chamber of Deputies refused to unite with the other parties in a vote of confidence in the government. Their negative votes were not formidable, for the Ministry was sustained by a favorable majority of 331; but the incident was symptomatic of further trouble. Mr. Ribot maintained his course resolutely, and on the anniversary of the Battle of the Marne, on Sept. 6, made a vigorous and confident address, in which he declared that the question of insisting upon the redemption of Alsace-Lorraine was not to be considered as open to discussion. But the very next day he and his colleagues decided to resign, because of their inability to secure the support of the Socialists. They were not dependent upon Socialist votes, and might have remained in office despite the opposition, but they deemed it desirable, if possible, to have a Ministry that could unite all political factions.

The new Cabinet, which was announced on Sept. 10, was, however, as its predecessor had been, chiefly a reorganization of the old one. Mr. Painlevé became Prime Minister, and Mr. Ribot Minister for Foreign Affairs. The portfolio of Minister of Munitions was again offered to Albert Thomas, the Socialist Deputy who had formerly filled it with admirable efficiency, but he declined it. He had favored sending French Socialist delegates to the international conference at Stockholm, in order that they might counteract upon the Russians the influence which the Germans would seek to exert; but his colleagues had disagreed with him and Mr. Ribot had refused to give passports for that purpose. He was also inclined towards referring the future status of Alsace-Lorraine to a plebiscite. His refusal to reënter the Cabinet was therefore ominous of continued Socialist opposition, which indeed was manifested on the first opportunity. The new Prime Minister on Sept. 18 appeared before the Chamber of Deputies with a bold and explicit statement of policy. He declared that the specific objects of the war included "the *disannexation* of Alsace-Lorraine, reparation for the ruin caused by the enemy, and the conclusion of a peace that will not be a peace of constrained violence comprising within itself germs of wars to come, but a peace that is a just peace, in which there are efficacious guarantees to protect the society of nations against all aggressions from one among them. As long as these aims are not accomplished," he added, "France will continue to fight." The use of the word "disannexation" caused much comment; and it was interpreted as meaning that the retaking of the Provinces was not to be regarded as in any sense a conquest, but merely as the undoing of the wholly undefensible act of 1871. The whole address made an excellent impression upon the Chamber, and upon the Allied nations and their governments. It was followed by a vote of confidence by the overwhelming majority of 378 to one. The Socialists, however, abstained from voting, a circumstance which moved Mr. Painlevé to express his regret at his inability to secure their support.

The new Ministry had for a time a prosperous career. On Oct. 23 Mr. Ribot retired, and was succeeded by J. Louis Barthou, a change which involved no crisis and no change of policy. Early in November the Prime Minister went to Italy, with the British Prime Minister, to organize ways and means for the strengthening of Italy against the Teutonic invasion, and on Nov. 12 electrified the Allies with the declaration that thenceforth there would be "a single front, a single army, a single nation." Yet the very next day there was a vote of no confidence, and the Cabinet resigned. The cause of this crisis was largely in the machinations of a Franco-Turkish German spy, Paul Bolo Pacha, who had been intriguing with and seeking to corrupt with German money the French—as also the American—press. Mr. Painlevé thought it expedient to postpone investigation of these and other similar matters until after a conference of the Allies which had been arranged for Nov. 15, but the majority of the Deputies thought that treason should be dealt with instantly upon its detection. The demand for a vote of confidence on Nov. 13 therefore resulted in 186 ballots for and 277 against the government; and the resignations of all the ministers were forthwith tendered.

In this emergency President Poincaré took the heroic step of turning to that veteran gladiator of French politics, Dr. Georges Clemenceau, who at the age of 76 had all the agility and driving power of youth, and who had been Prime Minister in 1906-09, when France defied Germany in the Morocco controversy. Dr. Clemenceau's scathing attacks upon Louis Malvy, who had been Minister of the Interior since the beginning of the war, for his connection with or responsibility for the intrigues of Bolo Pacha and other press scandals, had compelled that Minister's retirement and thus had greatly contributed to the downfall of the Ribot Cabinet. On Nov. 15 he accepted the task of forming a Ministry, and the next day he announced its completion, as follows: Prime Minister, Georges Clemenceau; Minister for Foreign Affairs, Stephen Pichon (who had filled that place in Clemenceau's former Ministry during the controversy over Morocco); Justice, Louis Nail; Interior, Jules Pams; Finance, Louis Klotz; Marine, Georges Leygues; Commerce, Etienne Clementel; Public Works, Albert Claveille; Munitions, Louis Loucheur; Instruction, Louis Laferre; Colonies, Henri Simon; Labor, J. Colliand; Agriculture, Victor Boret; Blockade, C. C. Bonnart. This was not a reorganization of the old Ministry, but a new body of men. Dr. Clemenceau on Nov. 21 made an address to the Chamber of Deputies, setting forth with much clarity and vigor his policy, particularly concerning the war, in which he made it obvious that none of his predecessors had surpassed if indeed any had equalled him in determination to fight to a victorious finish.

A month later the government took under consideration the case of Joseph Caillaux, a former Prime Minister, who with Louis Doustalot, a Deputy, was charged with treasonable dealings with the enemy. After an animated debate the Chamber of Deputies on Dec. 22 voted, by 417 to 2, to deny Mr. Caillaux parliamentary immunity, and to send him to trial for treasonable intrigues with Germany.

Many privations in food were suffered by the people during the year, though generally with a high degree of fortitude and patience. In the latter part of January there was a strike of employees in the great steel works at Harfleur, and lesser disturbances of the same kind occurred elsewhere at intervals, but in no case were they particularly formidable.

GERMANY

The war and the issues directly arising from it completely dominated domestic as well as foreign affairs in the German Empire and its constituent states, all matters of purely internal policy being disposed of or considered solely with a view to their effect upon the international conflict. The first and chief domestic issue to arise was that of reform of the electoral system, particularly in Prussia, where an intricate method of indirect class voting practically disfranchises the mass of the people. The demand for equal, direct and secret suffrage had frequently been made during many years, and early in 1917 it was again urged. The advocates of the reform argued that the granting of it would greatly strengthen the government in the prosecution of the war, by encouraging the loyal affection of the people and by improving the status of Prussia in the esteem of democracy throughout the world. Opponents of the change insisted, upon the other hand, that in the midst of a great war was no time for such things, and that it should be postponed at least until the return of peace. The latter ground was taken by the Imperial Chancellor, who was also President of the Prussian Ministry, Dr. von Bethman-Hollweg, who on March 29 declared that he was "opposed to any Prussian electoral changes while the men were in the trenches." Agitation for reform continued, however, with an increasing belief that it was favored by the Emperor at least as a war measure, and on April 3 a bill was passed by the Reichstag by the vote of 277 to 33, providing for the appointment of a committee to consider the general question of revision of the constitution of the empire. Four days later the Emperor directed the Chancellor to "assist in obtaining the fulfilment of the demands of the hour . . . and shape our political life so as to make room for the free and joyful coöperation of all the members of our people." When, on April 15, there occurred a further reduction of the bread rations of the people by 25 per cent., great popular demonstrations of discontent and protest arose in Berlin, in which cries for bread were mingled with demands for electoral reform. On May 17 the Reichstag adjourned for two months, without taking any action toward constitutional reforms beyond debate and the appointment of a committee.

During the recess of the Reichstag, however, leading Conservatives, either on principle or as a matter of military expediency, united in a formal appeal, strongly worded, for the immediate granting of universal equal franchise with direct and secret ballot. The committee on constitutional revision for the empire adopted resolutions in favor of making the Ministry, including the Chancellor, fully responsible to the Reichstag. The army and navy also were to be subject to the Reichstag, and the Emperor's appointments to those services were to be countersigned by responsible ministers. At this Field Marshal von Hindenburg and the whole military and Junker party rose in protest and appealed vehemently to the Emperor and to the Crown Prince to put a quietus upon such mad reforms. This in turn put the Chancellor upon his mettle, and he threatened to resign if his programme, which the Emperor had imposed upon him, were thus balked. The Emperor appeared to sustain the Chancellor, and in July issued an imperial rescript ordering the drafting of a bill for equal franchise in Prussia, to become effective before the next general election. A few days later, on July 14, the Hindenburg-Crown Prince-Junker cabal triumphed, and Theobald von Bethman-Hollweg was forced to resign the Chancellorship which he had held for eight years. At the same time there retired Dr. Alfred Zimmermann, the Imperial Minister for Foreign Affairs, and General von Stein, the Prussian Minister for War. They would probably have had to accompany the Chancellor into retirement in any case, but Dr. Zimmermann's fall was the more assured by the exposure to the world of his intrigues in Mexico against the United States, and his complicity with dynamite plots in Norway.

For a successor to Dr. von Bethman-Hollweg as Chancellor the Emperor selected by far the most obscure man who had ever filled that office, Dr. Georg Michaelis, a typical Prussian bureaucrat, of much thoroughness and long training in government work in minor places. His views and prospective policies on imperial matters were quite unknown to the public, and the foremost newspapers expressed the most contradictory opinions of him and forecasts of his course. His appointment was practically simultaneous with the reassembling of the Reichstag, and on July 19 he made his appearance before that body and delivered a clever and tactful address. He of course committed himself, nominally, to the ostensible policy of the Emperor concerning electoral reform, and expressed a desire for closer relations between the Executive departments of government and the chief party leaders in the Reichstag. That same day there was brought before the Reichstag a resolution which had been prepared in advance by a combination of the Catholic Centre and the Radicals and Socialists, declaring that Germany had entered the war in self-defense, and that it sought no forced acquisitions of territory, and rejected "all plans aiming at an economic blockade and the stirring up of enmity among the peoples after the war." Although it is scarcely conceivable that the Chancellor or his Imperial master approved this resolution, Dr. Michaelis thought it the part of prudence not openly to oppose it and thus challenge a hostile vote in the Reichstag at the very opening of his administration. He therefore let it pass in silence, and it was adopted by a vote of 214 to 116, with 17 members not voting. On Aug. 6 he announced the appointment of Richard von Kühlmann, formerly Ambassador to Turkey, as Minister for Foreign Affairs, together with some other Cabinet changes. Nothing more was done or said about electoral reform, and the conviction deepened that it was to be held in abeyance until the end of the war. Early in October Dr. Michaelis warned the Reichstag that peace on the basis of the surrender of Alsace-Lorraine was impossible, and that peace negotiations which differentiated between the German people and their Emperor could not be countenanced; and the Foreign Minister added that the question of Alsace-Lorraine was paramount, and that upon it no concessions could be made. This appeal to the spirit of Pan-Germanism was unluckily coupled with the admission by the Minister of Marine, Vice-Admiral von Capelle, that there had been a somewhat serious mutiny a few weeks earlier among the sailors of the German fleet in the Baltic, inspired by and patterned after the Russian revolution, and with the purpose of compelling the government to seek peace. The sequel, three days later, was von Capelle's resignation; and this was followed on Oct. 30 by the resignation of the Chancellorship by Dr. Michaelis.

The Emperor then turned to Count Georg F. von Hertling, who had been his first choice in July instead of Dr. Michaelis but who then had declined the appointment. On this second request of the Emperor, however, he accepted and became Chancellor and Prime Minister of Prussia. This was a most significant appointment, for several reasons. Count von Hertling was a Bavarian, and had been Prime Minister of that kingdom; and it was a striking new departure from the old Bismarckian principle thus to make a non-Prussian Chancellor of the Empire. He was also a Roman Catholic, of Ultramontane type, and although it was not unprecedented to make one of that faith Chancellor it was unusual, and never before had the actual leader or even a member of the Centrum been thus appointed. Again, he had been, as Catholic leader, one of the prime movers of the peace resolutions of July, which had challenged in advance the policy of Dr. Michaelis but which that statesman did not venture to oppose. Finally, he was known to be strongly antagonistic to electoral reform, as was the Catholic Centrum generally, although he had been identified with much other social legislation, and his appointment as Prussian Prime Minister, therefore, seemed to bode ill for any further progress in that direction in that kingdom. These forebodings were, however, happily disappointed when, on Dec. 6, he introduced into the Prussian Diet a bill providing for radical franchise reform. In doing this he described the bill as a measure of necessity, which was intended to abolish a system which had long been entirely out of date, and to establish in its place something in accord with the spirit, demands and requirements of the present day. The bill provided for the reform of both houses of the Prussian Diet. In the *Herrenhaus* or Upper Chamber the number of members appointed by the King from the nobility and landed gentry was restricted, and the number of representatives of commerce and industry was increased, though the character of it as a class chamber and not a popular body was maintained. The reform of the *Abgeordnetenhaus* was in the manner of its election, equal direct and secret suffrage being granted to every male Prussian 25 years old who had been a subject for three years and had resided in his community one year. It was also provided that the *Herrenhaus* need not accept or reject appropriation bills as a whole, but might pass upon their items separately.

The Prussian Minister of the Interior seconded this radical measure with hearty support; though neither he nor the Chancellor adverted to the interesting circumstance that at that very time the Imperial Government was negotiating with the Bolsheviki of Russia for the conclusion of a separate peace and that it was therefore supremely desirable for at least a pretense of democratic reform and progress to be made in Germany. The Conservative leaders of the House, however, gave to the bill a cold reception. They were willing to accept it if it were demanded by the Emperor and King as an act of necessity, but they regarded it as an abandonment of sound constitutional principles for the Emperor to yield to Parliamentary pressure as he did in dismissing the former Chancellor and appointing in his place one more satisfactory to the Reichstag; for they held it to be the true German principle that the Emperor should appoint whom he pleased, without regard to the wishes of the Reichstag.

These reactionary sentiments were doubtless intensified by the choice which had been made by the Emperor of a new Vice-Chancellor of the Empire, in which his concessions to Parliamentary influence were still more manifest. Like the Chancellor, the new Vice-Chancellor, Dr. Friedrich von Payer, was a non-Prussian, being a subject of Württemberg, and having his home at Stuttgart. While Count von Hertling, however, was an Ultramontane Catholic, leader of the Centrum, and author of the bill for the readmission of the Jesuit order to Germany, Dr. von Payer was an Evangelical Lutheran clergyman, and a Moderate Liberal in politics. In the selection of two men so widely differing in theology and politics, it was impossible not to suspect the Emperor of having made a bid for the support of both sides, while the choice for the first time of two non-Prussians was regarded as an effort to strengthen the loyalty of the South German states to the Empire.

The year was marked with increasing scarcity of food throughout the empire, and with consequently increasing social and political disturbances. At the great Krupp munitions works at Essen a strike of 17,000 workmen occurred in February, and periodically throughout the year there were strikes in various places and food riots even in Berlin itself. In the latter part of December the Berlin paper *Vorwärts* declared that 40 millions of the people were actually starving, and that Germany might within a month suffer a revolution and a collapse greater than that of Russia. For this utterance the paper was suppressed for three days, but no attempt was made to disprove its statement.

ITALY

The scarcity of food due to the war caused governmental troubles in Italy, as elsewhere. The Boselli Ministry had come into office at the fall of the Salandra Ministry in June, 1916, following the Austrian invasion. Early in the year it found itself subjected to increasing criticism and attacks, chiefly inspired by dissatisfaction with the food administration. Several members threatened to resign on June 4, when Baron Sonnino, the Foreign Minister, announced the independence of Albania under Italian protection, and during the next few weeks several changes were quietly made, to strengthen the warlike character of the cabinet. The result seemed favorable, and on June 30 the Chamber of Deputies declared its confidence in the Cabinet by a vote of 361 to 63. But as the Ministry had come in because of one Teutonic invasion, it was doomed to go out because of another. This was on Oct. 25, following the great German and Austrian attack on the Bainsizza Plateau. Baron Sonnino made a powerful speech on the war policy of the nation, which was much applauded, but immediately afterward, largely at the incitement of the former Prime Minister, Giovanni Giolitti, the Chamber voted no confidence by 314 to 96, and the Boselli ministry at once resigned. Prof. Vittorio Emmanuele Orlando, a Sicilian lawyer who had been Minister of the Interior in the fallen Cabinet, undertook the task of forming a new one, and on Oct. 30 announced it as follows: Prime Minister and Minister of the Interior, Prof. V. E. Orlando; Foreign Affairs, Baron Sonnino; Colonies, Mr. Colosimo; Justice, Mr. Sacchi; Finance, Mr. Meda; Treasury, Mr. Nitti; War, General Alfieri; Navy, Vice-Admiral Delbono; Munitions, General Dallolio; Military Aid and War Pensions, Mr. Dissolad; Education, Mr. Barenini; Public Works, Mr. Bari; Agriculture, Mr. Miliani; Commerce and Labor, Mr. Giufelli; Posts, Mr. Fara; and Transportation, Mr. Bianchi. This Cabinet, which was largely a reorganization of its predecessor, was received with much favor by the Chamber and by the nation, and on Nov. 14 received a practically unanimous vote of confidence.

RUSSIA

The closing weeks of 1916 saw Boris V. Stuermer compelled, largely by pressure from the Duma, to resign the office of Prime Minister of Russia, bearing the suspicion of having engaged in pro-German intrigues. He was succeeded by Alexander Trepoff, who had been his colleague as Minister of Railways, a loyal and progressive man, whose administration was marked with the murder of the notorious monk Rasputin, who had long exercised a baleful influence at the imperial court. After six weeks' tenure, however, Trepoff was compelled to resign, on Jan. 9, 1917, and was succeeded by Prince Golitzine, an accomplished man of letters and a member of the Council of the Empire, but conservative, reactionary, bureaucratic, and probably pro-German. Under his rule discontent increased. Scarcity of food provoked riotous demonstrations in Petrograd on March 9, which by March 11 involved strikes in munitions factories and a mutiny in the army, attaining revolutionary proportions. The leaders of Socialist and revolutionary bodies met in conference with labor leaders, to arrange for control of the movement, and a temporary Council of Labor Deputies was formed. The Duma met on March 12, defying the Czar's decree of dissolution, and under the leadership of its masterful President, Michael Rodzianko, assumed the leadership of what had manifestly become a revolution. The Czar was told plainly that his reactionary Cabinet must be dismissed, and that sweeping internal reforms must be granted to the empire. It was also made clear to him that there must be an end of the pro-German dalliance and intrigues which had flourished under the patronage of the German-born Czarina, and the war must be prosecuted with all possible energy and in full loyalty to the Allies.

The sequel, on March 15, was the Czar's abdication of the throne, for himself and his son, in favor of his brother, the Grand Duke Michael Alexandrovitch. That prince, however, prudently declined the succession, at least until a Constituent Assembly, chosen by universal suffrage, should determine the future form of government of the empire. The actual government was assumed by a new Cabinet, of which Prince George E. Lvoff, said to be a descendant of Rurik, was Prime Minister, President of the Council, and Minister of the Interior, and Professor Paul N. Milyukoff was Minister of Foreign Affairs, two of the ablest and purest men in Russia. The Executive Committee of the Duma announced a general programme of reforms, including general amnesty, universal suffrage, abolition of the secret political police, and freedom of speech, press and worship. The Czar and his family were temporarily confined at their palace at Tsarskoe Selo. On March 22, the United States first of all powers recognized the new government, and was quickly followed in so doing by Great Britain, France and Italy. On its part the new government strove promptly and energetically to vindicate its title. Its Minister of War, General M. V. Alexieff, assumed also the duties of Commander-in-Chief of the army, on March 24; two days later all restrictions and discriminations against Jews, in their rights of residence, travel, property, franchise, education and military service, were abolished; on March 30 the Poles were invited to choose their own form of government, the suggestion being that the ancient Kingdom of Poland, long partitioned among Russia, Prussia and Austria, should be reconstituted as an independent state, bound to Russia merely by a voluntary military union; and on April 4 all remaining laws restricting freedom of religious belief and worship were repealed. The question of war policy, however, continued to cause increasing anxiety and trouble. The Foreign Minister deemed it necessary on April 19 to repeat the assurances of "no separate peace," on this occasion addressing himself to the representatives of the workmen's organizations of the Allied Powers; and again on May 1 the government formally assured its allies that there would be "no slackening on the part of Russia" in their common struggle against the common foe.

At about this time, however, an insidious German or pro-German propaganda began to be influential in the Russian army itself. On April 30, A. J. Guchkoff, who had succeeded General Alexieff as Minister of War, was approached by representatives of the soldiers, who urged that the autocratic command of officers over the troops was incompatible with the democratic principles of the revolution, and who consequently demanded that there should be a large measure of self-government in the army, each company, regiment, and army corps, constituting a governmental unit. This demand was granted, and led, as might have been expected, to widespread demoralization and disloyalty. There were on May 4 ominous demonstrations of hostility to the government, in which many of the troops participated, on account of the government's policy toward its allies in the war. Nevertheless the Council of the Workmen's and Soldiers' Delegates on that day voted to accept the government's explanation of its statement of May 1 to the Allies. By May 9 the situation had grown so grave that the government felt its position to be insecure. It declared that "the frightful spectre of civil war and anarchy hovers over Russia, threatening its freedom," and as a means of salvation it suggested the reorganization of the government in the formation of a coalition Cabinet, in which there should be representatives of the Duma, the Workmen's and Soldiers' Delegates, and the Socialists. This was ignored, as was also the impassioned appeal which was made on May 13 by A. F. Kerensky, the Minister of Justice and the only Socialist in the Cabinet, to the Soldiers' Delegates, in which he declared that "as affairs are now going it will be impossible to save the country." Ignoring, or setting itself above, the government, the Council of Workmen's and Soldiers' Delegates on May 11 voted to call an international peace conference, to meet in some neutral country, following "an appeal to the peoples of the world, and a special appeal to Socialists in the allied countries." This Council, strengthened by the concessions to home rule in the army, so meddled with the direction of military affairs that Guchkoff, the Minister of War who had granted the concessions, was driven on May 14 to resign. Two days later the Foreign Minister, Milyukoff, also resigned in despair.

A favorable reaction seemed to occur on May 17, when Kerensky became Minister of War and Michael Terestchenko became Foreign Minister; and Generals Brusiloff and Gurko, two of the foremost army commanders, withdrew the resignations which they had offered on May 15. The reorganized government declared that it would welcome the conclusion of a general peace, without annexations or indemnities, but would not consider the proposal of a separate peace. How badly the substantial interests of the country were being affected was, however, indicated by the Minister of Finance, Shingaroff, on May 28, in his declaration that the country was being driven to economic ruin, with an eight-hour day, with wages almost doubled, and with efficiency in production in factories reduced by 40 per cent. On June 1 a local committee of Workmen and Soldiers, against the protests of the government and the army, seized the fortress of Kronstadt, which commands and defends Petrograd, and proclaimed it an independent republic; only to surrender it seven days later. The

Grand Duke Nicholas, who early in the war had been Russia's foremost general, was arrested at Tiflis on June 2 on a charge of plotting for restoration of the monarchy. Two days later General Alexis Brusiloff became commander in chief, succeeding General Alexieff. The Workmen's and Soldiers' Council on June 5 issued an appeal to Socialists and Labor Unions throughout the world, to attend a peace conference at Stockholm, the basis of peace to be the right of every nation to decide its own destinies; no annexations nor indemnities to be exacted. This, with some former utterances of the same body, moved President Wilson on June 9 to warn the Russian government against the insidious wiles of German propaganda. Apparently the Russian government appreciated the circumstances in which it found itself, for on June 16 it issued a proclamation telling that Austrian peace proposals had been rejected because they were regarded as a scheme to detach Russia from her allies and to ruin her army; and the next day the Duma voted for "an immediate offensive in close coöperation with Russia's allies." Ten days later the Congress of Workmen's and Soldiers' Delegates placed itself in line with the government by adopting resolutions rejecting "every policy tending to the conclusion of a separate peace or armistice." Unfortunately, it at the same time recommended the abolition of the Council of the Empire and the Duma. Favorable consideration of a proposal for granting independence immediately to the Ukraine caused the resignation of four members of the Cabinet on July 17; at which time there also occurred serious rioting at Petrograd, with much fighting between the extreme Radicals and government troops. The Finnish Diet on July 19 enacted a measure practically declaring the independence of that country from Russia.

A radical transformation of affairs occurred on July 20, when Prince Lvoff resigned the Prime Ministership, and was succeeded by Kerensky, a Socialist, a man of high ability and unblemished character, but too much inclined to compromise and conciliation. Three days later he "received unlimited powers" from the Council of Workmen's, Soldiers' and Peasants' Delegates; an extraordinary grant, in which he amiably acquiesced, despite the fact that the Council in question had no legal authority whatever. On Aug. 2 General Brusiloff resigned the chief command of the army, and was succeeded by General Korniloff. The next day the Foreign Minister, Terestchenko, resigned his portfolio. General Erdelli, the military governor of Petrograd, was assassinated. The Czar and his family were removed from Tsarskoe Selo on Aug. 14, and were sent to Tobolsk, in Western Siberia. Gen. W. A. Soukhomlinoff, a former Minister of War, was on Aug. 23 placed on trial for treason, charged with having withheld supplies of ammunition from the army and with having betrayed military information to the enemy. He was found guilty, and on Sept. 26 was sentenced to imprisonment for life. A great State Council met at Moscow on Aug. 26, to consider the state of the nation and to make plans for a permanent government. At this Kerensky promised a policy of "blood and iron" if necessary to crush domestic mutiny and to defeat foreign foes. A little later he had opportunity to fulfil this promise, when General Korniloff charged him with being subject to German influences and demanded that he surrender to him supreme civil as well as military authority. Kerensky's reply was to depose Korniloff from his command of the army. Korniloff refused to give it up, and marched his army upon Petrograd. Three days later, on Sept. 13, Korniloff's revolt collapsed, and General Alexieff succeeded to the supreme command of the army; only to resign in turn eight days later and be succeeded by General Tcheremisoff.

Meantime Kerensky, without waiting for the Constituent Assembly which it was intended to summon, and without any legal authority, on Sept. 15 proclaimed Russia to be a Republic. On Sept. 27 there assembled at Petrograd a Democratic Congress, of 1,200 delegates from the Social Democrats and Social Revolutionists, to which Kerensky paid little attention. On Oct. 4 he announced the formation of a coalition ministry, in which he completely ignored the request of that Congress that it might participate in the reorganization of the government. From that incident dated the increasingly bitter opposition to Kerensky which the extremists afterward manifested. The new Ministry took office on Oct. 10, and ten days later ordered the Duma—Russia's fourth Parliament—dissolved, and general elections to be held on Nov. 25 for delegates to a Constituent Assembly. Meantime on Oct. 18 municipal elections were held throughout the country by universal, direct, equal and secret ballot. The result was the election of a strong majority of Socialists of the moderate and constructive type. The radical element of the Social Democrats, or Bolsheviki, were left in a minority. To the latter, however, electoral results were of little consequence. They presently began to arrogate to themselves supreme power in the whole nation. On Nov. 7 the Maximalist Revolutionary Committee forcibly seized the central telegraph office, the state bank and the Parliament House at Petrograd, and the next day a general Bolsheviki revolt against Kerensky began. The leaders of this movement called themselves the Military Revolutionary Committee of the General Council of Soldiers' and Workmen's Deputies, and they announced their programme as comprising an immediate democratic peace, the immediate handing over of all lands to the people, and the convocation of a Constituent Assembly. A little later it was intimated that all government loans contracted on account of the war would be repudiated, and that the Constituent Assembly, which had already been summoned, would not be permitted to meet and act unless it contained a majority favorable to the Bolsheviki. A Maximalist or Bolsheviki Cabinet was announced on Nov. 10, with Nicolai Lenine as Prime Minister, Leon Trotzky as Minister for Foreign Affairs, and an ensign, Krylenko, as Minister of War; while a sailor and a laborer were named respectively as Minister of Marine and Minister of Labor. Lenine and Trotzky were men of academic but purely theoretical scholarship, who had been known as wordy and plausible Socialists of an extreme type, somewhat intimately associated with German propaganda. Their revolution, however, quickly gathered strength, and on Nov. 14 Kerensky was compelled to flee from the capital in disguise to escape arrest.

By Nov. 20 the Bolsheviki cabal had assumed absolute power, had begun withdrawing troops from the front, and announced its purpose to seek an armistice and to begin negotiations for peace, quite regardless of the pledge of the former Russian government to make no peace separately from the other Allies. (See also II, *International Relations.*) Because General Dukhonin demurred at the withdrawal of troops, Ensign Krylenko deposed him from command and himself became commander-in-chief. On Nov. 24 the Foreign Minister Trotzky began the publication of secret documents from the diplomatic archives, with the intention of discrediting the former government and the governments of the Allies, and sowing dissension among them. Among the confidential papers thus made public was what purported to be an agreement by Great Britain, France and Russia, that Italy should have the "Italia Irredenta" provinces, now held by Austria-Hungary, and some other territory, including a few Greek islands, as reward for entering the war. The elections of delegates to a Constituent Assembly were held according to arrangement on Nov. 25, and despite the threats of the Bolsheviki leaders that that body would not be permitted to have a majority hostile to them, the result was a victory for the Social Revolutionists, who secured a majority over the Bolsheviki and all other factions. The returns indicated the election of 420 Social Revolutionists, 225 Bolsheviki, 60 Mohammedans, 25 Cossacks, 25 Maximalists (who may act with the Bolsheviki), 24 Constitutional Democrats (whom the Bolsheviki denounce as enemies of the State), and four Jews. The meeting of the Assembly was indefinitely delayed, Lenine and Trotzky impeding it by arresting a number of anti-Bolsheviki members and by threatening to begin the use of the guillotine against all who opposed them, after the manner of the Terrorists in the French Revolution. During December the whole empire became involved in domestic dissensions marked with much violence and amounting to little better than chaos. The Ukrainians declined to recognize Bolsheviki authority, the Don Cossacks openly took the field against Lenine and Trotzky, secession from the empire was planned in Siberia, the "mad monk" Iliodore organized an army opposed to both Bolsheviki and Cossacks, and the Grand Duke Nicholas was reported to be organizing a strong monarchist movement in the Caucasus. Meantime scarcity of food prevailed throughout much of the empire, largely because of lack of transportation for distribution. An armistice was concluded with Germany and peace negotiations were undertaken.

SCANDINAVIAN COUNTRIES

Denmark.—Denmark suffered much from scarcity of food. Bread cards were issued at the beginning of April, and in July the export of fats and oils was prohibited. Many of the cattle and swine were killed for food and because of the lack of fodder for them. On June 17 the Prime Minister, Mr. Zahle, refused the demand of the Conservatives that T. Stauning, a Socialist, be retired from the Cabinet because of his participation in the Stockholm Socialist Peace Conference.

Norway.—Norway suffered perhaps less in scarcity of food than the other Scandinavian countries, but she suffered in loss of shipping far more than any other land save only Great Britain itself. It was also the scene of many German plots for the violation of neutrality, and of a number of violent outrages. The shipping interests repeatedly urged a commercial boycott of Germany, and when told that that would mean war they replied with pertinence that the existing condition of affairs was really worse than war could be. The government kept the situation well under control, however, and maintained its policy of neutrality. Christiania was at the end of November the scene of the conference of the three Scandinavian monarchs, at which close coöperation and mutual aid of the three kingdoms was adopted as their policy during the war.

Sweden.—The King on March 28 accepted the resignations of Knut H. L. Hammarskiold, the Prime Minister, and his colleagues, and entrusted the formation of a new Ministry to Carl J. G. Swartz. The new administration continued in office without important incident until the end of the parliamentary triennium. During the last 10 days of September elections for a new Second Chamber occurred, which resulted in a decided victory for Radicalism. The Social Democrats secured a plurality of the seats, with the Liberals second, and the Conservatives third. In the former Chamber the Conservatives and Social Democrats had been practically even, with the Liberals a bad third. The result of the elections would doubtless have made a change of Ministry necessary in any case, but the resignation of the Swartz Cabinet was precipitated on Oct. 2 by the disclosure of compromising relationships between Swedish and German diplomacy in neutral countries, particularly in Argentina, where Sweden had been used as a German catspaw in some grossly improper proceedings. The King proposed the formation of a coalition Cabinet, which should include representatives of all three parties, to which the Social Democrats and Liberals demurred. Those two parties were willing to work together in a union Ministry, as they could easily do because of the approximation of their principles and aims, but neither was willing to attempt coöperation with Conservatives, with whom they had scarcely a point of agreement. Finally it was agreed to organize a Ministry containing six Liberals, four Social Democrats, and one non-partisan who should be Minister for Foreign Affairs. Dr. Nils Eden, a Liberal and a professor in the University of Upsala, was accordingly selected for Prime Minister, and Hialmar Brantling, the leader of the Social Democrats, Minister of Finance. The other Ministers were Messrs. Hellner, Foreign Affairs; Loevgren, Justice; Nilsson, War; Palmstierna, Marine; Schotte, Interior; Ryden, Education; Pettersen, Agriculture; and Petren and Unden, without portfolios. The policy was to be even more strictly neutral than ever.

The sufferings of the nation because of war privations were intense; perhaps more so than in any other country, neutral or belligerent. Much of its own supplies had been shipped to Germany, and America and other allied countries refused to permit further exports to Sweden, lest they be diverted to the enemy in the same way. In October the government expropriated all animal fats except butter and the technical fats and oils, and also limited the height and weight of shoes, in order to conserve the supply of leather.

OTHER EUROPEAN COUNTRIES

Belgium.—Belgium continued throughout the year, save for a small southwestern corner, to be occupied, oppressed and plundered by German conquerors. Industries were suppressed or destroyed, unless they were of service to the Germans, and the people were robbed of their property and often evicted from their homes without compensation. Destitution, famine and disease prevailed to an appalling extent. There was, however, no indication of any breaking of the spirit of the people or of any weakening of their resolution to resist the invader to the end. In the government which King Albert maintained in a fragment of his realm one cabinet change occurred at the beginning of August, when Charles de Broqueville retired and was succeeded by Lieutenant-Colonel de Ceyninck as Minister of War. The latter officer has had a distinguished career in the war as an artilleryman, and is a Liberal in politics.

Finland.—Finding that the Provisional Government in Russia was no more inclined to grant autonomy than the deposed Czar had been, the Finnish Diet on July 19 adopted a bill practically declaring independence. The Russian Governor, General Stakhovitch, who was thus deprived of all authority, expressed the opinion that this action was a great mistake, but made no attempt to resist it, and on the following day resigned his place, but resumed it under orders from Petrograd. Russian garrisons were maintained, and at mid-August a decree ordered the dissolution of the Diet, which that body refused to obey. Scarcity of food then led to demonstrations, a general strike, and a cabinet crisis. A Socialist Cabinet was formed, and the Governor struggled on to administer the affairs of a country which almost universally repudiated his authority. Finally on Sept. 19 he insisted upon retiring, and N. V. Nekrasoff was appointed in his place. On Oct. 6 the Senate prepared plans for the reorganization of Finland as a republic, with a president elected by direct popular vote for a five-years' term, and with a cabinet responsible to the Diet; but it was recognized that it might not be possible to execute this design until after the end of the war, when it was hoped that the Russian Republic would freely assent to it. The independence of Finland has, however, been recognized by Germany, France, Austria-Hungary, and the Bolsheviki government of Russia.

Greece.—The beginning of the year saw all of Greece blockaded by the Allied fleet, save the small portion controlled by Eleutherios Venizelos and his partisans. Much distress prevailed, and food riots were frequent in Athens, in which there were cheers for Venizelos and the Allies. Owing to these circumstances the Cabinet, headed by Professor S. Lambros, resigned on April 18, and was succeeded on May 3 by one under the Prime Ministry of Alexander Zaimis, who had filled that office before. Friction between the King, who was influenced by the Queen, a sister of the German Emperor, and the Allied Powers continued and grew more intense, until on June 12 Constantine abdicated his throne at the demand of the three powers, Great Britain, France and Russia, to which he owed it, and retired from the country with the Queen and the Crown Prince. He was succeeded by his second son, Alexander, 24 years of age. This naturally led to the resignation of the Zaimis ministry on June 25, and to the triumphant succession of Mr. Venizelos. The new Cabinet, announced on June 27, consisted of Messrs. Venizelos, Prime Minister and Minister of War; Repoulies, Interior; Tsirimokos, Justice; Politis, Foreign; Coundouriotis, Marine; Negropontes, Finance; Spiritos, Communications; Papanastasion, National Economy; Dingas, Education; Embirkos, Food Supplies, and Simos, Relief for Refugees. The accession of this Ministry was enthusiastically acclaimed by the people. On Aug. 4 King Alexander publicly took the oath of office, the ceremony resembling the inauguration of an American President more than the installation of a King, and on Aug. 27 the new Ministry received from the Boule a hearty vote of confidence.

Montenegro.—Montenegro, having been conquered by Austria-Hungary, has suffered much oppression and seems to be almost in danger of total extinction. At the end of January the Cabinet headed by Andre Radovitch resigned because of the refusal of King Nicholas to abdicate in favor of Crown Prince Alexander of Serbia. General Milo Matanovitch became Prime Minister, but he too resigned on June 12, and was succeeded by Eugene Popovitch, who combined in himself the functions of Prime Minister and Minister for Foreign Affairs.

The Netherlands.—The Netherlands spent the year between the two millstones of Germany and the Allies, and suffered much from both. Germany ravaged Dutch commerce, while the Allies, unwilling to let Holland be a channel for the transmission of supplies to Germany, established something in effect like an embargo and blockade against her; even depriving her of direct cable service. The result was a scarcity of fuel which was disastrous to industries, and a scarcity of food which reduced the masses of the people to little more than starvation. Early in July food riots occurred of so serious a character that the troops were compelled to fire upon the rioters, with much bloodshed.

At the beginning of May Gen. N. Bosboom, the Minister of War, insisted upon calling to the colors the Landsturm of 1908. This was contrary to the judgment and wishes of the Chamber of Deputies, which by a vote of 44 to 26 expressed its disapproval and regret; whereupon he resigned. He was succeeded on Aug. 4 by Bernard C. de Jonge, the first civilian who had ever filled the place.

A special session of Parliament met on June 28, to which the Queen submitted no measures but the proposals of the former session for the revision of the constitution in respect to education and the franchise, thus leaving it free to give all necessary attention to questions arising from the war, and to preparations for the changed conditions which would accompany the return of peace. She took occasion, however, to give warning of the approaching danger of becoming involved in the war, and of the necessity for the fullest possible military preparation.

Poland.—Distraction has been the the lot of Poland during the year; the country not knowing whether it was independent, or a German province, or a Russian protectorate, or a divided land portioned among its three conquerors. In mid-December, 1916, the Austrian Archduke Charles Stephen, brother of the former Queen of Spain, was named Regent, by the Central Powers, but he appears not to have assumed authority. On Jan. 15, 1917, a Polish Council of State met, under German management, and two days later Prince Vaoclaw von Niemoyovski, a grandson of the last Polish President, in 1830, was appointed Viceroy. Two months later Russia offered to establish a "free, united Poland," on the lines existing before the partition, and a large part of the nation, including many leaders, inclined to rely upon that offer rather than the German plan. The Germans, being in actual possession of the country, proceeded with the organization and direction of its government. On Sept. 1 the courts were turned over to the Polish authorities, and a few days later a Council of Regency, of three members, was substituted for the Council of State. On Nov. 17 Professor Jan Kucharzuvski became the first Prime Minister of the new Poland.

Portugal.—Portugal has been the scene during the last year of a successful political revolution, the sequel of the attempt at such an achievement the year before. Early in the year symptoms of unrest became ominous, and on April 25 the Ministry headed by Antonio J. Almeida resigned over the question of national economic control, and was succeeded by one under the lead of Dr. Affonso Costa. Early in December, during the absence of the Prime Minister at Paris, where he was attending the Inter-allied War Conference, the revolutionists effected a general uprising. They were led by Sidonio Paez, an artillery officer who had been professor of mathematics in the University of Coimbra and also Portuguese Minister to Germany, and by Machado Santos, who had been the chief leader of the uprising of a year before and who in consequence had been imprisoned for a time for complicity in mutiny at Abrantes. The trouble began on Dec. 6, and for three days there was incessant fighting, accompanied by much bloodshed and some loss of life. In order to quell the effusion of blood, on Dec. 9 the Ministry resigned, although it had enjoyed and presumptively retained the support of a large majority in Parliament. The Prime Minister hastened back from Paris, but was intercepted at Guardia, before he could reach Lisbon, and was put under arrest. The venerable President of the Republic, Bernardino Machado, was then ordered to resign, although the revolution had ostensibly been directed not against him but against the Costa Ministry. He refused to resign, whereupon he was placed under arrest, and was presently exiled from the country. A "provisional government" was formed, with Sidonio Paez as Prime Minister and Minister for Foreign Affairs; Machado Santos as Minister of the Interior; Moura Pinto as Minister of Justice; Alfredo Magalhaes as Minister of Public Instruction; Feliciano Costa as Minister of Labor; Aresta Branca as Minister of Marine; Xavier Esteves as Minister of Commerce; Santos Viegas as Minister of Finance; and Tamagnini Barboza as Minister for the Colonies. Seeing that the provisional government could not count on the support of more than a small minority of Parliament, it was decided to dissolve that body and to order a new general election.

The country suffered from scarcity of food and other hardships of war, though not in an extreme degree. There were serious food riots in Lisbon in May, but they seemed unwarranted and were believed to have been artificially provoked by German agents. On Aug. 25 an incident occurred under the law for the separation of Church and State, when Cardinal Anthony Mendea Bello, Patriarch of Lisbon, was required to remove from the capital at five days' notice.

Rumania.—Early in January a reorganized Ministry was announced in what was left of Rumania, with the veteran statesman T. C. Bratiano still at its head as Prime Minister and Minister for Foreign Affairs. The other members were: Messrs. Constantinescu, Interior; Duca, Education; Antonescu, Finance; Vintila Bratiano, War; Michael Cantacuzene, Justice; Justiano, Public Works; Greceanu, Industry and Commerce; Mirzecu, Agriculture and Domains; and Jonescu, Ferikide and Continescu, without portfolios.

Serbia.—The Serbian nation has been suffering the fate of the conquered, under a conqueror who aims at its extermination; but it clings to its integrity with indomitable resolution. Near the end of June the Cabinet was reorganized, as follows: Prime Minister and Foreign Minister, Nicolas P. Pashitch; War, General B. Terzitch; Treasury, Stoyan Protitch; Interior, L. Jovanovitch; Justice, M. Djouritchitch; and Agriculture, M. Nintheitch.

Spain.—Although it was one of the few countries of Europe not directly involved in the war, Spain found 1917 a year of anxiety, disturbance and danger. These conditions were due in part to division of opinion concerning the policy to be pursued toward the war and especially toward the submarine campaign, which seriously affected Spain's commerce, and in part to social, economic and political unrest and agitations, which had for years been chronic. Count Romanones and his colleagues of the Ministry resigned on April 19 because under the neutral *régime* they could not protect the lives and interests of Spaniards from German outrages, and they were succeeded by a Cabinet headed and organized by Marquis Manuel Garcia Prieto, the President of the Senate. This Ministry survived less than two months, both its domestic and its foreign policy being challenged. It resigned on June 9, and on June 12 Eduardo Dato organized a new Ministry announcing as the cardinal features of his policy the observance of strict neutrality in the war, and the making of various economic reforms. His promises failed, however, to satisfy the demands of the people or to abate the agitation for reforms, and on June 27 he felt compelled to proclaim martial law throughout the country, a state of affairs which lasted until Oct. 7. Constitutional guarantees of popular rights were suspended, with the approval of the King, and a proclamation denounced in severe terms the prevailing campaigns of agitation and disorder in various provinces. This policy was not successful. Agitation continued, and became more and more violent, so that by the middle of August it culminated in general strikes, widespread rioting, and at Barcelona in a distinctly revolutionary outbreak. With these disturbances the Ministry sought to deal by means of repression, but with little success. There was a sufficient subsidence of disorder by Oct. 17 to warrant the withdrawal of military rule and the restoration of the constitution, but the Ministry was unable to win and to hold the confidence of the Cortes. The Minister for War, General Primo-Rivera, resigned on Oct. 17 and was succeeded by General Marina, but a few days later the cabinet resigned. J. S. Toca declined to form a new ministry, whereupon the King again turned to Marquis Manuel Prieto, who undertook the task and on Nov. 4 announced himself as Prime Minister and Minister for Foreign Affairs, and Messrs. Salamonde, Interior; Ventosa, Finance; Zamora, Public Works; Rida, Justice; Juan de la Cierva, War; Jimeno, Marine; and Rodes, Public Instruction. This was a coalition ministry, composed of representatives of all the more important factions of the country. Its policy was to be the maintenance of neutrality.

Switzerland.—Switzerland, reasonably fearing violation of its neutrality, on Jan. 16 proceeded with a fuller mobilization of its army. It suffered much distress through the inability of exporters to collect bills in Germany or Austria-Hungary, and also through scarcity of food which drove it in February to adopt two "meatless days" a week. In September the President declared that 1,350,000 persons, or more than one-third of the entire population, were receiving food at reduced prices through state aid. On Dec. 14 the General Assembly at Berne elected Felix Calonder as President and Edward Mueller as Vice-President, of the Republic; both of them Radical Democrats.

Turkey.—The Ottoman Empire, suffering the dismemberment of its Asiatic possessions, began the year with a formal renunciation of the suzerainty which Great Britain, France, Russia, Italy, Germany and Austria-Hungary had established over it by the treaties of 1856 and 1878, and with a declaration of its perfect independence. In this action it had the approval and sanction of Germany and Austria-Hungary.

ASIA

China.—The beginning of the year saw an amicable settlement of the once ominous Cheng Chia-tun incident, in which there had been a hostile clash between Chinese and Japanese troops in a dispute over the right of control. The settlement involved the punishment of certain Chinese officers and the payment of an indemnity to Japan, while Japan for her part waived, at least temporarily, her claim to exercise police rights and powers in Southern Manchuria and Inner Mongolia. This arrangement was completed on Jan. 23. The Senate and House on March 11 approved the proposal of the Prime Minister, Tuan Chih-jui, to sever diplomatic relations with Germany; to this action the President, Li Yuan-hung, gave his approval, and on March 14 the German Minister received his passports. On March 29 Mr. Tuan and his colleagues drafted and signed a declaration of war, which was to become effective and be promulgated as soon as it was approved by the provincial and military governors, by Parliament and by the President. The governors at once approved it, and Parliament indicated its readiness to do so if the President would; but the President hesitated to make any decision. Late in April the military governors assembled at Peking for a conference, at which a strong majority favored immediate declaration of war, though a considerable minority opposed it. In consequence, the Prime Minister demanded that Parliament adopt the declaration, but although a majority of the members declared themselves to be in favor of it, they refused to take the step at Tuan's dictation. At this the military governors demanded that Parliament be dissolved; the Prime Minister sent troops to surround the Parliament House, ostensibly to preserve order; the President thereupon complained that Tuan was attempting coercion, which he would not countenance, and his newspaper organ charged that Tuan had "sold himself to Japan," at which Tuan arrested the editor; after a riotous session both Houses voted that they would not declare war while Tuan was in office; and on May 23 the President dismissed Tuan Chih-jui and appointed in his place Wu Ting-fang, formerly Chinese Minister at Washington. The gravamen of the case against Tuan was that he defied Parliament and sought to establish a military despotism; that he connived at corruption and was improperly subservient to Japan were also charged but with less ground. (See also II, *International Relations.*)

The dismissal of Tuan provoked one of the most serious crises in the history of the Chinese Republic. The military governors demanded his reinstatement, and when this was refused, on June 1 they mobilized their provincial troops and declared 11 provinces to be withdrawn from the Republic. Hsu Shih-chang, a monarchist who had been the guardian and preceptor of the former boy-Emperor, was proclaimed Dictator, and Wang Shih-chen Prime Minister. President Li requested Chang Hsun, one of the foremost of the governors, commander of the army at Nanking, to confer with him at Peking in order to effect a compromise. Chang complied with the request, and presented to Li the ultimatum of the eleven provinces. This was, that Tuan should be recalled to office, and that Parliament should be dissolved immediately and the election of a new one decreed, no member of the old Parliament to be eligible to the new. After some hesitation a compromise was effected. Parliament was dissolved, though reelection of members was not forbidden; the reinstatement of Mr. Tuan was waived, and Li Ching-hsi was made Prime Minister, with a coalition cabinet; and the President remained a virtual prisoner at Peking until the new Parliament should be elected and assemble, the first duty of which should be to decide the question of declaring war. With this arrangement the revolted provinces appeared to be content and they resumed normal relations with the rest of the republic. Within a month, however, the crisis was renewed in an acute form. Chang Hsun, a rude and illiterate man, but possessed of a certain military genius and backed by a formidable body of troops and of vast wealth, on July 2 ordered the deposition of the President and the restoration of the boy-Emperor, Pu-yi. The President fled for safety to the Japanese legation, and Chang made himself Dictator under the guise of Grand Secretary and began preparing for the reënthronement of an Emperor who would be a mere puppet in his hands. This *coup d'état* caused a violent reaction. All other parties and factions, including most of the 11 military governors who had formerly seceded, united to oppose Chang, who was then regarded as a German agent. President Li remained, on counsel of his advisers, at the Japanese legation, but at his direction the Vice-President, Feng Kuo-chang assumed the headship of the state, at Peking; Tuan was restored to the Prime Ministership and in addition took command of the army, and Sun Yat-sen became commander of the navy. In a few days Peking was surrounded and besieged, and

Chang was compelled to flee to the Dutch legation, while the puppet Emperor abdicated twice within a week. By July 12 the downfall of the abortive "restoration" was complete. As a result of these operations and of the new elections, Feng Kuo-chang was retained in the presidency which Li had relinquished temporarily to him, and on Aug. 14 war against Germany and Austria-Hungary was formally declared. Tuan Chih-jui remained in office as Prime Minister and Commander-in-Chief of the army until Nov. 16, when he resigned because of his approval of the Lansing-Ishii "gentlemen's agreement" between America and Japan, which was at first widely resented in China as hostile to Chinese interests. His resignation was accepted on November 24, and on December 2 a new Cabinet was announced, as follows: Prime Minister and Minister for War, Wang Chihchin; Foreign, Lu Cheng-hsiang; Finance, Wang Koking; Interior, Chin Nun-hsun; Navy, Admiral Liu Kuang-hsun; Agriculture, Tien Wenlieh; Commerce, Tsao Yu-lin.

Japan.—The year opened with a violent campaign against the Ministry of Baron Terauchi, and when the settlement of the Cheng Chia-tung incident with China was announced, on Jan. 23, dissatisfaction and hostility arose to such a pitch, that to save the Ministry from impending defeat and enforced resignation, on Jan. 25 the Emperor dissolved Parliament and ordered a general election. The election was held on April 21, and resulted in a victory for the Ministry, its friends securing 217 seats to the Opposition's 164. The Cabinet therefore remained in office, and thereafter had a comparatively tranquil course. It gained much favor and prestige in November, when Baron Ishii came to the United States and made with Secretary Lansing a "gentlemen's agreement" which greatly strengthened Japan's position with respect to China.

Persia.—A new Nationalist Ministry was formed on June 28, with the veteran statesman, Ales Sultane, as Prime Minister. Its programme was the rehabilitation of Persia on a basis of complete independence and freedom from Russian or other alien influence, though in a spirit of hearty coöperation with Russia and the Allies in the prosecution of the war. A strong Republican sentiment is reported to be developing throughout the nation.

Siam.—The kingdom of Siam, the first Asiatic power with which the United States ever made a treaty, entered the war on the side of the Allies on July 22, in order to vindicate the rights of nationality and the sanctity of treaties. It made itself active and efficient thereafter in the suppression of plots against British India and the checking of German intrigues in the East.

THE EUROPEAN WAR

ALEXANDER MARTIN, JR.

Following the British successes on the Somme and the French recovery of ground at Verdun in 1916, the Germans had gradually lost the offensive on the western front. They were, however, able to release men and guns for the campaign against Rumania and, by treachery, so to overwhelm that small state as to distract attention from their gradually waning power on the field of eventual decision, the western front. While the Teuton offensive against Italy has doubtless been excellent material for home consumption to bolster up waning courage and has cost Italy enormously, the fact is not altered that the war will be decided on the western front—and there Germany continued to lose throughout 1917.

Politically the most important event of the year was the entry into the war of the United States with her huge resources in men, money, and supplies. Other former neutrals have more or less actively taken sides against the Central Powers until, as the year closes, only the Russian *débâcle* has saved the Teutons from coming face to face with military disaster.

German air raids on England have continued throughout the year whenever favorable weather permitted, while she made a desperate bid for mastery of the seas by her ruthless submarine campaign, now clearly doomed to failure.

As the year closes, encouraged by the outcome of the drives against Russia in 1915, Rumania in 1916, and the partial success of the offensive against Italy, she is reported to be moving men and guns from the east and massing them for an offensive on the western front. While a strictly censored press is allowed to disclose but little, economic conditions in Germany and Austro-Hungary must be approaching a crisis, and for that reason, as well as to forestall the appearance of American troops in force on the western front next year, an early decision is doubtless eagerly desired by the Prussian war lords. What they could not accomplish against the relatively unprepared French and British at the Marne, at Ypres, or at Verdun, they can hardly hope to accomplish against the highly trained, thoroughly equipped, and aggressive British and French armies now holding the western front. Doubtless Generals Petain and Haig and their gallant followers would like nothing better than to see a series of German attacks on the western front as a sure means of wearing down German man-power.

The following are the principal events of the year, as gathered from the official reports and grouped according to the different fronts. In view of the unusual amount of activity on all fronts during the year, lack of space prevents anything more than a simple statement of occurrences with little or no comment.

The Western Front.—Open weather and soft ground prevented large movements as the year began, but there was much patrolling, trench raiding and artillery fire and minor actions near Verdun, in Champagne, and east of Nieuport. British raids along the front from the Somme to Ypres were frequent, while the Germans replied in kind.

London announced Jan. 21 the taking over of a new sector in the Somme salient from opposite Bapaume to opposite Péronne. Trench raids were especially frequent around Beaucourt, Serre, Wytschaete, Vimy, Neuve Chapelle, Gendecourt and Armentières and Canadian raids west of Lens.

Jan. 25 the Germans, using the recent French tactics of a short but intense artillery preparation followed by the infantry assault, made important gains at Hill 304 west of the Meuse at Verdun and French counterattacks were only partially successful.

February opened with unusually cold weather and operations were severely handicapped. The British continued their raids and small attacks, the gains of territory being small, the policy apparently being to use up the numerically inferior German army by a relentless attrition. Their immediate objective was Bapaume, at the base of the Somme salient. Small but frequent gains and attacks from the south on Serre, eight miles west, marked the early February operations. Feb. 17 the British attacked simultaneously south of the Ancre opposite Miramont and Petit Miramont and on the north bank west of Petit Miramont for substantial gains, and next day repulsed attacks. The effect of this pressure became apparent when it was found possible to advance along both banks against slight resistance Feb. 22-24. Serre, an objective since the Somme offensive of July, 1916, was taken Feb. 25. The British advance was deliberate. Feb. 28 they were within two miles of Bapaume but meeting increased resistance. Farther west detachments entered Gommecourt, at the western end of the German salient, finding it free of the enemy, while on the east attacks near Sailly-Saillisel indicated a weakened resistance.

While the British artillery was brought up and other details arranged, the pressure toward Bapaume was directed toward Péronne, on the south face of the salient, for further gains. A German attack March 2 northwest of Roye disclosed that the British had taken over additional front from the French, and were now holding about 100 miles. The British resumed their offensive March 9, taking Irles, west of Péronne with such ease as to indicate that it was only used to cover further German withdrawals.

German attacks in Champagne made minor gains Feb. 15 and March

3 northeast of Eix in the Verdun sector, and next day north of Caurières wood. French counter-attacks promptly regained most of the ground and repulsed further attacks.

Redisposing the troops released by the increased British front near Roye, the French became more active, recovering ground previously lost and developing a weakened resistance between the Avre and Aisne. March 17 a general advance along the front from Andechy to the Oise was ordered and disclosed German withdrawals. Pressing ahead, the French entered Roye, where roads and street-intersections had been blown up by mines just before their arrival. The pursuit was kept up and next day cavalry entered Nesle and Noyon. Pressing eastward in spite of wrecked roads and heavy rains they reached a point northwest of La Fère. Farther east, near Soissons, the advance began later and was more deliberate. North of Soissons they advanced on a wide front towards Coucy-le-Château and to the south front of La Fère.

After taking Irles, the British moved forward their guns and opened fire on Bapaume Ridge March 12, while their infantry moved forward northeast of Irles to find the German position abandoned. They occupied Loupart wood and Grévillers, two miles from Bapaume, and advanced northeast of Gommecourt but could not advance south of Arras. March 15 London announced further gains west of Bapaume from the south toward Achiet-le-Petit. Apparently the Germans were withdrawing as pressure was applied.

Farther south, the advance toward Péronne met greater resistance. Bapaume was occupied March 16 and Péronne and Chaulnes two days later. Numerous villages south of the Somme were taken and the advance continued, cavalry pushing the rear guards of the retreating Germans. March 24 London announced that 54 villages had been occupied, the new front running four miles east of Péronne and seven east of Bapaume. The new German line ran through Cambrai, St. Quentin and Laon. The German withdrawal was hastened by British pressure, but was not hurried or unpremeditated, as was shown by the thorough way carefully laid plans were carried out and the complete destruction of roads, buildings, trees, and property in the area.

The new line was about 25 miles shorter and defensively stronger. The area evacuated was about 600 sq. miles and included several important towns.

General Nivelle attacked vigorously between St. Quentin and the Aisne and soon reached a position five miles southwest of St. Quentin and seven miles south, with a flank on the right bank of the Oise. The advance on La Fère, checked temporarily near Artemps, proceeded. The Germans dammed the Oise and Serre so as to inundate and cut off the town and make a crossing impracticable. The French gained favorable positions south of St. Quentin March 24, after driving the enemy from Grand Seraucourt and Gibecourt. Another column advancing up the north bank of the Somme encountered the enemy strongly entrenched west of St. Quentin. March 28 Paris reported the armies in contact from the Somme to the Aisne.

South of the Oise captures of valuable supply depots indicated that the German withdrawal had been more hurried than elsewhere or not carried out as planned.

The principal resistance to the British advance was along the Bapaume-Cambrai road; further south their front was about on line with the French advance. British and French troops pushed on toward St. Quentin, the French advance being more rapid, but delayed awaiting the bringing up of guns. West of Laon, between the Ailette and the Oise and southwest of Laon north of the Aisne, they carried on two offensives. After a severe bombardment, the infantry advanced and captured a front of about eight miles. The Germans had prepared strong supporting points but the usual entrenched line was not found. Attacks between the Somme and Oise drove the Germans in some disorder north of the Ailette and the advance was resumed April 1.

On the Soissons-Laon front all the heavy German guns had not been withdrawn and the fighting was constant and more bitterly contested. Vauveny was taken April 1 and Laffaux next day. In spite of their desperate resistance, the Germans did not counter-attack. The position was important as a footing for an advance north against Laon.

While the French approached St. Quentin from the southwest the British advanced from Péronne. North of Arras the German line held its position and the new British line extended southeast to a junction with the French near St. Quentin.

British airmen had been very active around Arras, securing some 1,700 photographs of the German trenches, and the information thus gained was added to by numerous trench raids. Seemingly the Germans were not aware of the purpose of these preparations.

British guns were active April 7 and 8 and all night of April 8-9, pausing on the morning of April 9 long enough for infantry commanders to distinguish their objectives, and reopening fire as the infantry advanced on an 11-mile front from Givenchy to Hénin-sur-Cojuel, south of Arras. Everywhere the front positions were taken with small loss. Among the positions captured and famous as the scene of previous hard fighting and heavy losses were "the Harp" and other intricate redoubts and bombproofs. The celebrated Vimy Ridge to the north, protecting the Germans in their possession of the Lens coal fields and twice before taken in part only to be lost, was captured by the Canadian troops. Additional gains gave the British a second line of trenches and field works. At points of greatest gain the advance was more than two miles, while 9,000 prisoners were taken.

Farther south the advance continued next day, approaching Monchy-le-Preux, five miles east of Arras, and to the north cleared Forbus and the wood on the east of the south end of Vimy. The Germans thought Vimy Ridge impregnable and resisted bitterly the night of April 9 and next day, but on the 11th the Canadians reached the summit at the north end and worked gradually down the eastern slope where their artillery could not reach to help them.

The British continued to advance toward Cambrai over the road from Bapaume, storming German positions. Northwest of St. Quentin and between Bullecourt and Quéant there was heavy fighting. The British were through the entrenched positions and fighting in the open, delayed by difficulty in moving forward guns and supplies and by the German rallies around Bullecourt and on Vimy Ridge.

North of Soissons French artillery stopped German counter-attacks intended to halt the movement eastward, while German guns in turn halted French advances from Neuville and Laffaux.

One object of the German withdrawal, they claimed, was to upset the Entente plans for a spring offensive in the area evacuated, which was laid waste with such brutal thoroughness that any movement across it would be necessarily slow. Not to be outdone Generals Haig and Nivelle began at once to hammer the points of support between which the withdrawal had been made. The immediate British objective, Lens, is also important as the center of the French coal fields from which Germany has drawn much fuel. The French objective was Laon, useful as a base for operations east along the Aisne toward the Meuse.

The British pushed ahead toward Lens, taking numerous small villages and fighting against bitter opposition among the culm piles and colliery buildings.

South of the Scarpe selected Guard and Bavarian troops were sent forward to stop the British advance over the Arras-Cambrai and Bapaume-Cambrai roads and much severe fighting followed. The Bavarians suffered terrific losses at Monchy, while the Prussians could not hold Lagnicourt, being driven out by the Australians and trapped in their own entanglements where they suffered severe losses. North of St. Quentin the British pushed slowly eastward to within a few hundred yards of the place by April 14.

Following the inconclusive fighting east of Arras the British launched violent attacks along the north bank of the Scarpe, three or more miles east of the line attacked April 9. April 23 they delivered drum fire and infantry attacked on a seven-mile front from north of Croisilles to Gavrelle. Seven German divisions—10,000 men to the mile—were engaged. The British force was about the same and was preceded by "tanks" to clear away machine guns. The British made gains and captured 3,000 prisoners, repulsing attacks on the following days. Arleux was taken on April 28, but attacks on Oppy, Gavrelle, and Roeux were repulsed. The Germans used shell craters as shelters for machine guns and thus materially delayed British progress.

The French captured trenches south of St. Quentin April 13, while artillery was active between St. Quentin and Rheims and points further east. April 16 they carried positions on a front of 25 miles to a depth of two miles between Vailly and Berry-au-Bac and the Aisne and Rheims, capturing 11,000 prisoners from the 19 divisions opposing them. North of Rheims and east of the Aisne, at Loivre and Courcy, the Germans were forced back. East of Craonne their second line was penetrated and gains were made next day on a 10-mile front in Champagne, east of Prunay, and on a seven-mile front between Mt. Cornillet and Vandesiancourt. German counter-assaults regained but little ground. The French continued their attacks on the following days for substantial gains north of the Aisne at Vailly and beyond, further east at Ville-aux-Bois, also several miles of second line positions about Mts. Cornillet and Haut, pressing from the west beyond Laffaux. German attacks on April 20 near Ailles and Hurtebise failed, as did others April 25 on positions west of Craonne, and in Champagne at Navarin Farm, Tahure, and Pompelle.

After the fall of the Belgian forts the French withdrew from a line of old forts surrounding Rheims from north to east. The Germans utilized these dominating positions, erecting field works which now prevented French progress similar to that of the English from Arras east. About the end of April the French began a series of attacks north and east of Rheims to outflank this fortified line. They attacked from Mt. Haut to south of Beine and Nauroy. Attacks gained north of Rheims between Courcy and Brimont and east of that town, on the Moronvillers-Sillery front, and west of Mt. Cornillet, and counter-attacks were repulsed. The Germans attacked between Hurtebise and Cerny and farther west along the Chemin-des-Dames ridge.

A series of French attacks began May 4 and 5 against the Chemin-des-Dames, between Soissons and Laon and parallel to the north bank of the Aisne. Attacks along both banks occurred; along the north with Craonne as an objective, and on the south against the western-most end of the line of hills encircling Rheims. Craonne was taken, but the other attack did not attain its objective. After some days' interval, severe German counter-offensives attempted to regain Craonne. The French continued to advance.

Between April 9 and May 12 the combined French and British captures totalled 49,579 men, 444 field and heavy guns, 943 machine guns, and 386 pieces of trench ordnance, about equally divided between the two allies.

The French offensive slackened and the Germans became more aggressive, attacking around Craonne May 11 to 13 and near Maisons-de-Champagne. May 14 Berlin reported the recapture of St. Berthe farm at the western end of the Chemin-des-Dames in the salient still held by the Germans around Ft. Malmaison. There was great activity in the air, 14 German and 12 French planes being brought down on May 12. The German attacks on the Chemin-des-Dames east and west of Ft. Malmaison near Filain and Moulin de Laffaux were kept up from May 14 to 17, but the French curtain and machine-gun fire broke down all of them and inflicted very heavy losses.

General Pétain, the hero of Verdun, was appointed Commander-in-Chief May 15, relieving General Nivelle, who was placed in command of a group of armies. General Foch, of Marne and Yser fame, who had gone into at least partial retirement with

Marshal Joffre, succeeded Pétain as Chief-of-Staff of the Ministry of War. In some quarters the change was attributed to dissatisfaction at the losses in the recent French attacks in view of gains made. The more general opinion is that Pétain could have had the supreme command last fall but insisted on a freer hand than the war ministry felt willing to give at that time.

London reported the capture May 3 of strong positions in an attack against the entire line east of Arras from south of the Sensée north to the Acheville-Vimy road, as well as progress toward Bullecourt and from Arleux toward Fresnoy to break the line south of Lens and force evacuation of that place. There was much hard fighting. Special Bavarian storming troops recaptured Fresnoy, but the success was purely local. At Roeux and all along the Bullecourt salient the British progressed, reaching the southeast edge of Bullecourt, while German attacks were repulsed near Fresnoy and Gavrelle. Australian troops, reaching the south edge of Bullecourt May 9, assaulted and captured it on the night of May 9, the artillery repelling counter-attacks. They were partially forced out next day; four distinct counter-offensives followed and stiff fighting continued to May 17, when the Australians reached the eastern edge of the town.

The Germans attempted to enlarge their gains at Fresnoy and near Lens by use of flame projectors but were later forced out. From May 11 to 14 the British attacked and took Roeux after severe house-to-house fighting and gained near Gavrelle and on Greenland Hill. May 20 a British attack captured a mile of trenches said to be part of the "Hindenburg Line" between Bullecourt and Fontaine-les-Croiselles. German counter-attacks were repulsed and several days of hard fighting with indefinite results followed. The progress of the Arras offensive was for the time at an end, the British having gained the first and second lines of the German entrenched system over a front of about 20 miles and capturing about two divisions.

Apparently believing the change in the French high command meant a shattered morale and impending French collapse, the German Crown Prince launched attack after attack against the French positions on the Chemin-des-Dames. Attacks failed along the edge of Californie plateau, against Mts. Cornillet and Haut, near Auberive, and between Rheims and Courcy. Where the first day at Verdun the Germans advanced four miles, here they could not advance a quarter of a mile and were unable to hold their gains.

The French attacked the evening of May 20 after all-day artillery fire and gained the summits and northern slopes of Mts. Cornillet and the Casque, and the Teton hills to the east, where they had gained the southern slopes on May 2. The Germans had tunnelled Mt. Cornillet, giving shelter from shell fire for reserves where they could readily reenforce troops on the summit. These gains gave the French all the important observation points south of Moronvillers and Norroy.

After violent artillery preparation the French attacked and gained positions on the Vauclerc and Californie plateaux, their object being to gain the edges of these areas and high points overlooking the Aillette, whose valley could not otherwise be reached by the French guns, while the Germans made use of this valley as an approach in attacking the Chemin-des-Dames. They repulsed heavy counter-attacks against the Vauclerc positions and west of the Chemin-des-Dames and east and west of Cerny, while they advanced southeast of Craonne, on either side of Mt. Cornillet, and recaptured positions temporarily lost on Casque and Teton heights. Further attacks were repulsed here May 28 and 30 when five German assaults occurred between 4 a.m. and daylight.

Both French and British offensives now slackened. Activity of flying forces increased, with many battles and loss of an average of 12 machines a day for each side. Unofficial British estimates during May give German losses as 442 planes, the French losing 185 and the British 86.

British raiding parties were active about Lens, where a bitter fight raged for the possession of a fortified power house which changed hands several times, being finally taken by the British June 4.

At 3:10 a.m. June 7 an attack on a nine-mile front was made near Wytschaete, five miles south of Ypres and 20 north of the front involved in the previous offensive. The general objective was the salient between the Douve on the south and Hill 60, where the British were repulsed in 1915, on the north.

West and north of the Messines-Wytschaete ridge the Germans had a highly organized front trench system protected by wire entanglements, concrete machine-gun emplacements, fortified redoubts, and every device that two years of occupation could give or skill devise. The ridge itself, with a fortified village at each end and numerous well-organized strong points, formed the second line, while a third line ran a mile in rear.

The organization and carrying out of the attack were entrusted to General Plumer, commanding the Second British Army. For more than a year 19 deep mines to be charged with hundreds of tons of explosives had been burrowing beneath the ridge. These were exploded at the moment for the attack, the shock being perceptible in London. For two weeks the British artillery fire, directed from air planes, had been so accurate and heavy as to all but suppress German fire. The mines formed craters from 65 to 80 feet deep and of corresponding diameter. The British infantry advanced under cover of a smoke screen and the German gun fire, held for the moment of advance, was of little effect.

The attack proceeded according to schedule and with clock-like precision. Mines and artillery had so wrecked the front position that it was occupied within 10 minutes, and the attack moved against the second line on the ridge. The fortified villages of Messines and Wytschaete held out until afternoon, but the remainder of the ridge was taken within three hours, while the attack pushed on against the third line, portions of which were occupied. The area gained is about five miles wide and three deep, and freed Ypres from the constant menace of attack.

Counter-assaults were repulsed the night of June 8, and trenches to a depth of half a mile on a two-mile front were captured south of the Souchez, near Lens. Seven thousand four hundred and thirty-nine prisoners and 20 guns were taken in the operations and the Germans withdrew from positions south of Messines between the Lys and St. Yves.

German attacks around the Chemin-des-Dames were kept up without appreciable gains. Parts of two divisions attacked shoulder to shoulder June 2 on the Californie and Vauclerc plateaux. There was also fighting in the Argonne, and near Verdun. The French defensive fire was usually able to beat down attempts of German infantry to advance. East of Vauxaillon the Germans gained front-line trenches. Paris claimed June 21 that the troops employed were fresh from the Russian front. The trenches were regained that morning. The fighting here was warmly contested for several days, the French delivering further successful attacks on June 24 and 25.

Farther east, on the Chemin-des-Dames, the efforts of the Crown Prince were no more successful, meeting repulses, on June 22 south of Filain and twice east of Chevreux. A French surprise attack, northwest of Hurtebise, on June 25 captured a strongly fortified underground defensive position with 340 prisoners. The Germans made small gains between Craonne and Laffaux, but the French usually recaptured them promptly. Gains south of La Bovelle farm on June 28 and 29 were retaken July 1, and attacks near Cerny, Ailles, Froidmont, Californie plateau and elsewhere failed to alter the French positions. A German attack on a two-mile front south of Porgny and Filain gained front trenches and prisoners, but most of the ground was retaken after protracted fighting. German attacks at Panthéon farm, and near Hurtebise, Ailles, Laffoux mill and Juvincourt were repulsed July 8 and 9.

Attacks in the Verdun sector made small gains at Hill 304 June 27, and on the east slope two days later. French counter-assaults recovered the lost ground and the trenches on Hill

304 July 7. German attacks were repulsed on Avocourt June 30 and on Hill 304 July 8.

Threatened by the British advance, and to strengthen their hold on Hollebeke, the Germans attacked south of the Ypres-Comines canal June 15 without success. The British made additional slight gains between Messines and Warneton and around Lens, but a counter-assault next day stopped the advance. Gains were made east of Monchy and west of Bullecourt; and June 18 and 19 the fighting was continued on the Bapaume-Cambrai road and east of Croisilles. Following these slight gains and three or four days marked by numerous raids by both sides and great artillery activity by the Germans, the British attacked southwest of Lens, concentrating great artillery power on a narrow front and making frequent thrusts which carried them by the end of the month within half a mile of the center of the village. The Germans resisted doggedly and, mounting machine guns among the culm heaps and mine pits, were able to hang on. Stopped here, the British attacked at Oppy, six miles southeast, capturing 2,000 yards of front-line trenches where the advance from Vimy Ridge had ended. A night attack July 4 gained at Hollebeke where the Wytschaete offensive left the German line exposed, but the enemy retained his hold on essential points west of Comines.

London reported, July 10, raids near Nieuport, showing that the British had taken over the coast end of the western front. German artillery was active here, and after a heavy bombardment destroyed British trenches and bridges over the Yser. An attack seized trenches on a 1,400-yard front and the ground back to the river, capturing 1,250 British cut off by the destruction of the bridges. A simultaneous attack at Lombartzyde entered the trenches but was repulsed. Raids and bombardments failed to shake the hold of the Germans thus gained at the mouth of the Yser.

The British continued raids and minor attacks along their front. Air battles were frequent, London reporting, July 13, a fight in which 30 planes took part. There was much artillery firing from July 17 to 20, the Germans firing about Lens and south to St. Quentin; the British from La Bassée canal to Lens, and raiding near Lens, Ypres and Armentières. Canadian troops gained 300 yards on a 600-yard front south of Lens July 22.

The German attacks on the Chemin-des-Dames next shifted to the center, between Courtecon and Cerny, where, following some hours of artillery preparation July 14, a night attack by specially selected and trained "shock troops" gained on a front of about a mile and 300 yards deep west of Cerny. Counter-attacks regained all but 550 yards. Both sides expended men freely in these attacks, so far as can be seen, with no material gain. Being the weaker numerically it would appear that the Crown Prince was aiding the Allied plan of "attrition."

Having attacked the western and central portions of the ridge, the Germans next tried the eastern, attacking the Casemates and Californie plateaux north and northwest of Craonne July 19 with the Fifth Prussian Guard Division. Following a most severe bombardment, they penetrated both positions, but were immediately driven from all but 600 yards of the Californie plateau and a small outwork on the Casemates. Their losses were extremely heavy. Returning to the attack at daybreak July 22, the same troops fought all day, making only slight gains.

The French took the offensive the morning of July 24, re-occupying the front line on the Californie, recovering their positions on the Casemates plateau and pushing their front beyond its position of July 19. German attacks on July 25 failed, as did attacks between Cerny and Braye, near the center of the ridge, on July 20 and near La Bovelle July 26.

The French also recovered ground previously lost in the Verdun sector on a mile-and-a-half-front about half a mile deep between Avocourt wood and the western slope of Hill 304, taking 425 prisoners and establishing themselves July 17 in their positions of the previous month.

In the Champagne the French attacked July 14 north of Mt. Haut and northeast of the Teton and south of Moronvillers in order to shake the German hold east of Rheims and force a retirement by threatening their right flank. July 26 they discovered front-line trenches north of Auberive abandoned, indicating the German position in Champagne had become difficult. There was almost constant fighting along the entire front, the Germans usually attacking, but slackening their efforts, especially on the Aisne and in the Champagne heights, while their attacks on the Chemin-des-Dames became much less violent and more scattered. The French took the offensive south of Ailles for gains Aug. 11 and 16, forcing counter-attacks that failed.

After three days of artillery preparation, French infantry advanced Aug. 20, taking Avocourt wood, both summits of Dead Man Hill and portions of Corbeaux and Cumières woods on the left of the Meuse and Talou ridge, Champneville, Mormont farm, Hills 344 and 240, and parts of Fosses and Chaunes woods on the right bank. These positions had been taken by the Germans in their Verdun offensive in 1916 after weeks of fighting. A counter-attack failed at Avocourt and the French advanced next day, entering Regnieville and Samogneux and occupying the Côte de l'Oie. In this offensive they captured 7,639 men, 24 cannon and over 200 machine guns. Weak counter-assaults failed, and the French continued to force their way northward, gaining Hill 304, organizing the positions gained and taking 1,400 prisoners. Elsewhere the French repulsed attacks along the front, and Aug. 31 attacked successfully on the Hurtebise plateau to secure artillery observation points and stop further use of the locality in local German offensives. German counter-attacks failed and they next began, Sept. 4, attacks on the French positions on the Casque and Californie plateau.

German attacks were repulsed north of Verdun Sept. 24 and 25, as were attacks north of Vauxaillon, at Mt. Haut and in the Aisne sector, the superiority of the French artillery and their effective barrage stopping all assaults. Night attacks Sept. 26 on the Chemin-des-Dames, Casemates and Californie plateaux and at Cerny were stopped by barrage. These attacks were kept up all along the front until early in October. They met with no success, and as the fighting around Ypres became heavy and demand for munitions increased, both sides slackened their efforts here.

A combined French and British offensive began near Ypres July 31 along a 20-mile front, with an artillery preparation exceeding anything yet seen, and a gas attack. The British front extended from Warneton to Steenstraete, the French from there to Dixmude to the north. The Germans abandoned their front line trenches, made untenable by the intense artillery preparation, and fought from shell craters and concealed concrete machine-gun emplacements—"pill boxes"—in rear. The attack met serious resistance at the second line but occupied most of those trenches and in places gained the third line, advancing from one to three miles over the front which was being attacked.

German counter-assaults that night gained ground along the Ypres-Roulers railroad and recaptured St. Julien. Heavy rain prevented further Allied attacks but also interfered with German counter-assaults. The advance threatened Lille and the submarine bases, and Crown Prince Rupprecht concentrated a very heavy artillery fire to stop it. The British recaptured St. Julien, and the Germans could not hold Hollebeke after taking it by hard fighting.

The Canadians meanwhile had made further gains at Lens from the southwest and on Aug. 14 also suddenly launched an attack on the north and northwest side against Hill 70 and the front west of it for important gains, in places to a depth of a mile. Unusually heavy counter-attacks failed and the Canadians continued to close on the town.

The attack near Ypres continued, the weather improved, and British and French troops advanced Aug. 16 for gains on a 12-mile front. The former German trench system had been abandoned for numerous underground redoubts and other concealed positions to escape artillery fire. The

British caterpillar-tractor tanks were used with good effect against these positions. German counter-assaults on the four days following came to nothing and the British attacked and advanced Aug. 22, gaining favorable artillery positions.

The overflowing of Steenebeke stream kept the French inactive, but the British from Aug. 23 to 28 pushed a series of local attacks east of the St. Julien-Langemarck line, moving northeast toward Poelcapelle and advancing south of the Ypres-Menin road. Delayed by exceedingly wet weather, they re-arranged their artillery in the Ypres region, shelled German positions and carried out numerous air raids on supply bases. Their line of attack ran along the ridge from Ypres northeast toward Roulers. Having gained a foothold on the southwest end of the ridge, a further advance threatened German positions on the lower ground westward to the coast.

A German attack failed south of Le Catelet Aug. 30. There were minor affairs around Lens, Monchy and Havrincourt. As the Allied efforts relaxed, the Germans became more aggressive, but attacks north of Ypres and Verdun and numerous raids had little or no success.

Sept. 18 the British took the offensive at St. Julien, and two days later resumed offensive operations on a large scale, attacking eastward along the Ypres-Menin road where they had previously been checked. After a prolonged bombardment of intermittent severity the infantry attacked at daybreak behind the most effective barrage yet achieved which the Germans described as a "fire roller." In a few hours they occupied half a dozen strongly organized German "fighting zones" on the ridge between Ypres and Menin, and by a second attack made gains northwest of the Ypres-Roulers railroad to the north. These positions were held and organized during the following days despite constant German counter-assaults and on Sept. 26 the British renewed their attacks with success, though on a smaller scale. The Germans attacked the recently-won positions from Sept. 27 to Oct. 1 without success, but lost heavily, as their artillery was outmatched and the infantry attacks poorly supported.

General Sir William Robertson, the British Chief-of-Staff, stated on Sept. 29 that the British during 1917 had captured four times as many German cannon and more prisoners than the Germans had taken from the British during the war.

Another British assault was made Oct. 4 on a nine-mile front east of Ypres, gaining very valuable positions to a depth of a mile and a half at point of greatest advance. The attack was against the Passchendaele-Gheluvelt ridge and along the railroad towards Roulers, menacing the submarine bases on the Belgian coast. Again on Oct. 9 a joint British and French attack was made on an eight-mile front between Gravensstafel and Bixschoote, west of the one of Oct. 4, the British advancing along Passchendaele Ridge and the French in the low and flooded ground to the west. German counter-attacks failed in face of a superior artillery fire.

Adverse weather conditions, such as stopped the Lens offensive of Oct., 1915, and the Somme in Oct., 1916, have not been able to cause the British and French to delay their attacks in 1917, and on Oct. 12 they again attacked on a five-mile front from south of Passchendaele northwest to a point north of Poelcappelle for moderate gains. Only weak counter-attacks followed and the new positions were organized. Attacks in Houthulst forest and north and south of Poelcappelle Oct. 22 met with determined resistance, restricting gains, while counter-attacks were more numerous and successful than in previous attacks.

After several days of intense artillery preparation the French, Oct. 23, captured Ft. Malmaison and the adjacent quarries and fortified villages southwest of Laon, taking 8,000 prisoners and occupying territory on a front of six miles to a depth of over two. The French had attacked here in May and the Germans had repeatedly tried to drive them back. The position is an important one, as it enables the French to bring artillery fire to bear on the northern slope of the Chemin-des-Dames, heretofore out of reach of the French guns. The capture was a brilliant stroke of arms. Oct. 25 the French advanced their lines east of Chavignon and gained ground near Cerny-en-Laonnois, being aided by the gains to the west. Bringing up their guns they took advantage of the commanding positions gained about Malmaison, enfilading the German lines and taking Filain and Pinon, while on the Chemin-des-Dames they took Froidmont farm.

German troops gained trenches in Chaumes wood near Verdun Oct. 29, but were later ejected.

American troops were sent into French trenches in Alsace Oct. 27 for training rather more than fighting.

The results of recent gains around Ft. Malmaison became apparent when the Germans retreated across the Ailette on the night of Oct. 31-Nov. 1, blowing up the bridges and leaving mines and other traps to delay pursuit. During the past six months the Germans have delivered many attacks from the shelter of the north slopes of the Chemin-des-Dames ridge where the slope protected them from artillery fire. The positions recently captured allowed these slopes to be raked by artillery and this fact caused the withdrawal, leaving the French in possession of a strong line from Craonne to Chavignon.

The Allies made numerous small gains east of Ypres, and Canadian troops took Passchendaele Sept. 6, while the French advanced and attempted, in conjunction with the British, to hem in Houthulst wood where numerous machine-gun "nests" were out of reach of artillery fire. Belgian troops took part in the advance for the first time in many months. The Canadians continued their advance to the north end of the ridge Nov. 9. British and German raids along the front were frequent, Allied troops were rushed to Italy, and there was an unusual quiet on the western front.

Shifting suddenly from the Ypres front, Marshal Haig struck a blow before the city of Cambrai on Nov. 20, threatening the German line between Douai and Laon. The operation was in the nature of a surprise attack of unprecedented proportions. Men and tanks in great numbers had been moved into the area by night and concealed. Such artillery fire and raids as were used occurred in the Ypres area to the north and there was no suggestion of an attack before Cambrai. Without warning, the tanks advanced at 6:20 a.m., tearing their way through the German wire entanglements and reaching the supposedly impregnable Hindenburg Line before artillery fire could be brought to bear on them. They cut trails for the infantry and battered down machine-gun positions. The infantry followed, assisting in the reduction of the field works, taking charge of prisoners, and organizing the positions occupied while the tanks moved on in pursuance of a plan to penetrate the enemy lines as deeply and quickly as possible, leaving to the bayonets and grenades of the infantry the completion of the work. By afternoon a position five miles beyond that of the morning had been reached.

The attack covered a front from the Scarpe to St. Quentin, but the principal attack was against the center third, being secondary elsewhere. The Havrincourt-Cambrai road formed the center of the advance, the main attack being south of the Bapaume-Cambrai road and north of Villers-Guislain village. After capturing Havrincourt and several villages, the right of the advance occupied Marcoing, an important railroad junction five miles southwest of Cambrai. South of Marcoing ground was gained to the St. Quentin-Cambrai canal. The advance progressed next day into Noyelles, about three miles from Cambrai, having covered two-thirds the distance to the objective in three days and overcome two fortified lines. Nine thousand seven hundred and seventy-four prisoners and over 100 guns, some as large as 9-inch, were taken. Lt.-Gen. Sir Julian Byng, commanding the forces engaged, was promoted to rank of General for this success.

German assaults from north, west, and east Nov. 22 drove the British out of the village of Fontaine-Notre Dame, their nearest approach to Cambrai. Bourlon wood, a 600-acre tract west of the village, had remained in

German hands. The trees shut out the tanks and sheltered the defenders, in part, from artillery fire, and possession of the wood was of marked advantage in attacking the British and forcing them southward through Fontaine.

British attacks Nov. 23, 24, and 25 won practically all of Bourlon wood and part of Bourlon village. Bitter fighting with but little gain for either side followed. The impetus of the British assault had for the time spent itself, while the Germans were rushing up many guns and men.

Minor British gains around Moeuvres and Inchy were made Nov. 23, and German efforts to recapture Cantaing were repulsed. Farther south British efforts against Rumilly, Crevecoeur and Vendhuide failed.

The British forced their way through Fontaine-Notre Dame and Bourlon village, but were forced out by attacks from the north which disclosed a much strengthened German defense.

The Germans attacked simultaneously Nov. 20 the north and south faces of the three-sided salient projected into their line by the attacks of Nov. 20 and 22. The north face extended westward from Bourlon wood through and beyond Moeuvres, the German attacking from Bourlon wood to a point west of Moeuvres. For lack of time this front had not been so well organized as the front facing south and conditions were almost those of combat in the open. Checked near Moeuvres, they surmounted the ridge between Bourlon and Moeuvres and advanced about a mile to the vicinity of the Bapaume-Cambrai road, where they were stopped after long and severe fighting.

The southern face extended southward from the bend in the Scheldt near Masnières to Villers-Guislain, about seven miles, and was well organized, so that trench-warfare conditions prevailed. Furthermore, it rested on the canal and seemed so secure that apparently the British dispositions were made with a view to any attack coming mainly against the northern face. The Germans attacked in force on a 12,000-yard front from Vendhuile north to Masnières. The greater part of the line held, but on the extreme right of the face attacked, the Germans broke through with masses of infantry over a front of two to three miles. Brushing aside all immediate opposition, they pushed westward to Villers-Guislain. Seizing the village and adjacent area, they turned to the right, taking Gouzeaucourt to the northwest and Gonnelieu to the north. The German advance was rapid. They captured a section of the railroad running north, driving off the American railway operatives engaged in transporting munitions. Apparently these places were considered so far back of the fighting zone they were not maintained in a state of immediate defense, the troops were taken unawares, and Gen. Byng's position was precarious. Heavily engaged on the north front, he had to find reserves quickly to meet the more pressing danger around Gouzeaucourt. Troops were hurried there and to Gonnelieu and at once counter-attacked.

The German infantry had out-distanced its artillery support and from 10 a.m. to 3 p.m. the British, constantly reënforced, fought to regain the two villages and the railroad line, finally recovering Gouzeaucourt. The Germans attacked 15 times at La Vacquerié, north of Gonnelieu, next day, also at Gonnelieu and Masnières. The British fell back behind the Scheldt at Masnières to a stronger position Dec. 2 and the Germans took La Vacquerié Dec. 3. Berlin claimed the capture of 6,000 men, 60 guns, and 100 machine guns in the offensive.

Inconclusive fighting followed, the Germans being forced to desist from attacks because of exhaustion and losses, while Byng withdrew his lines Dec. 4 and 5 from about one-third the area gained by his thrust. A general readjustment of lines followed with local and minor attacks.

Local attacks the night of Dec. 3-4 and Dec. 4 north of Passchendaele and southeast of Polygon wood gave the British small gains and improved their position.

German attacks Dec. 12 ten miles west of Cambrai between Bullecourt and Quéant seized a small British salient but could make no further progress, and other attacks were repulsed with losses.

East of the Meuse the French attacked successfully north of Verdun Nov. 25, driving the enemy from the north slope of Hill 344 and advancing their front to the ravine between the hill and Caures wood, near Haumont. Since the considerable French gains here on Aug. 20, the Germans had attacked repeatedly between Samogneux and Chaumes wood. While most of these attacks had been repulsed a limited gain had been made on Hill 344. Attacking without artillery preparation the French recovered this ground and pushed their lines beyond the positions of last August, taking 800 prisoners. The Germans were taken by surprise; counter-attacks were not effective, while violent artillery and infantry actions here early in December were without results.

The Germans have been reënforcing the western front heavily with troops from the eastern front. This and necessity of sending Allied aid to Italy has for the time at least put an end to offensive operations by the British or French. Thanks to the favorable positions gained on the western front during 1917 a German offensive will be heartily welcomed by the Allies, as it is sure to tell heavily on the waning powers of the enemy both in men and material.

The Italian Front.—The Italians began a small offensive in the eastern Trentino March 3, making small gains. Austrian attacks were delivered in the Sugana valley, on the Carso, and in Visdende valley. The Italians captured a position at Boscomolo April 7, and improved their artillery positions by advances along ridges between the Adige and San Pellegrino valleys in the Trentino. Air-plane raids were frequent.

Italian artillery opened a three-day bombardment May 12 on a 30-mile front from Tolomino to the sea on the Julian front. The Austrian counter-fire was strong, but Italian infantry advanced May 14 in spite of curtain fire. The front extended to the north of Gorizia, in territory held by Austria since the beginning of hostilities. May 17 Rome announced the success of Isonzo attacks, Mts. Cucco, Vodice to the north, part of the slope of Monte Santo to east of the Isonzo, and Hill 174, two miles east of Gorizia, being taken. Austrian counter-assaults next day about Bodrez. Monte Vodice, and Grazigna failed, while additional prisoners taken by the Italians brought the total to 6,432.

The Italians centered their attacks on Monte Vodice, between Cucco and Santo, the three heights forming the main defensive front of the Austrian line between Goritz and Tolomino. One of the peaks of Vodice, thoroughly prepared for defense, with machine guns posted among rocks and in caverns, was captured May 19. The Italians were assisted by heavy British guns, and made further gains east of Plava and on Monte Vodice May 21. Italian artillery repulsed an Austrian attack in the Trentino made as a diversion.

Italian assaults gained Jamiano May 24 on a 17-mile front on the southern Carso plateau, 9,000 prisoners being taken. Entrenched positions from Foce Timavo to a point east of Jamiano were taken next day.

Italian infantry attacked May 26, following an all-day artillery preparation along the Carso front, gaining heights a mile and a half northwest of Duino and Hill 145 to the north. They entered Castagnavizza, but were forced out by shell fire, and next day occupied San Giovanni and advanced east and southeast of Jamiano. Meanwhile pressure was maintained east of Gorizia and to the north, while fighting continued around Monte Vodice.

Austrian attacks west of Castagnavizza and north of Jamiano failed; but south of Jamiano the Italians were forced back June 5, 171 officers and 6,500 men were captured, and the Italian right was seriously threatened. Attacks to the north to relieve the pressure failed, and severe fighting in the Vopocco valley and between Monfalcone and Monte Hermada followed, the Austrians increasing their captures to more than 10,000 men. The Italian defense stiffened, and the Austrian offensive dwindled.

Italian artillery was engaged June 10 in the Adige and Terragnolia valleys, and Italian troops in a surprise attack rushed Agnello Pass, captured most of the Austrian positions on Monte Ortigara near the Sugana, and advanced at Tonale Pass. Alpini captured a peak 11,000 feet high.

Repeated Austrian attacks June 15 to recover Monte Ortigara failed, and a sudden Italian advance June 19 took Hill 2105 and neighboring positions with 936 prisoners. The gains were important, giving a line of advance to Trent. Heavy bombardments and counter-attacks followed. June 26 Vienna reported recovery of lost positions, while Rome claimed troops were withdrawn from summit because of losses from artillery fire. June 28 and 29 the Italians withdrew inside Agnello Pass, holding the eastern end on to Asiago plateau, and advanced northwest of Selo.

An Austrian attack east of Gorizia July 14 was repulsed, and except for artillery and minor activities all fronts were quiet. Airplanes bombed the Austrian naval base at Pola the night of Aug. 2-3.

Following this long period of comparative quiet, General Cadorna suddenly started a powerful offensive on the Julian front from the Adriatic to the upper Isonzo, north of Gorizia. With 2,000 guns in the attack, the Italian fire was unexpectedly heavy. Throwing bridges over the Isonzo during a fog, crossings were made Aug. 19 at many points north of Gorizia. Troops on the Carso aided by attacking, capturing Selo.

Over 250 airplanes flew back of the Austrian lines, bombing reserve troops. In two days 13,000 Austrians were captured and counter-attacks repulsed. The north end of the 37-mile front advanced eastward from Conale, and gains were made in the northern Carso, but the Austrian center around Gorizia held.

The Second Army circled the northern base of Monte Santo, important as a key to the east-and-west mountains separating the Italian troops in their operations. A force on the Bainzizza plateau was driven out. Threatened from the rear, Santo was evacuated Aug. 24, though earlier in the year it had resisted determined frontal attacks. The Second Army next attacked the fortified Monte San Gabriele Sept. 4, after cutting it off from the east by artillery fire, while the Italian infantry fought its way up the north and west sides.

The Carso troops continued to press forward along the Brestovizza valley eastward toward Monte Hermada.

Bavarian and Turkish divisions were sent to the aid of the Austrians, who, reënforced, launched a double counter-offensive Sept. 7 at Monte San Gabriele and on the southern Carso with local successes, forcing Italians back on the northern slope of the mountain and recovering all losses on the Hermada heights. The Italians withstood an attack on San Gabriele Sept. 11, and three days later reached the summit. They also gained on Bainzizza plateau, where, after a period of inactivity due to lack of supplies, further advances were made Sept. 29.

In the western Trentino there were minor Austrian activities, and the situation along the entire front was at a deadlock.

An extremely powerful offensive comprising veteran German and Austrian troops and many German guns commenced Oct. 24 and drove back the armies of General Cadorna from their positions in northeastern Venetia on a 60-mile front from the Adriatic to the western Carnic Alps. During October a Teuton force of about 500,000 men was concentrated north of Gorizia and east of the Isonzo. While composed chiefly of Austrians, it contained about 10 divisions of German troops. It was known that an offensive was being prepared and the Italians had asked for aid as certain supplies were insufficient. The Germans had carried on a clever propaganda, undermining the morale of certain Italian troops.

A brief but destructive bombardment battered the Italian trenches from Tolmino to Plezzo north of Bainzizza plateau and east of the Isonzo where the line was held by the more inferior troops. The Teuton infantry attacked overwhelmingly along the entire 19-mile front, driving out the Italians and forcing them across the Isonzo. The Teutons crossed Oct. 25 and pressed westward.

From the Bainzizza southward to the coast the Italian line was out-flanked, and threatened by an advance against its line of retreat, was forced to retire, giving up fortified positions about Gorizia and the Carso. The Teutons advanced rapidly down the right bank of the Isonzo and the troops withdrawing from Gorizia and vicinity narrowly escaped being cut off. Gorizia was occupied by the Teutons Oct. 28.

The invaders were now well established on Italian soil along a 30-mile front. The advance in the north had overwhelmed the Italians and flanked them out of strong positions in the south. General Cadorna delayed the Teuton advance with his cavalry and continued to withdraw westward. The invaders occupied Udine Oct. 29, while the Italian Second and Third Armies fell back behind the north-and-south line of the Tagliamento river. The imperilled troops north and south of the broken front likewise fell back from the Carnic and Dolomite Alps fronts. As the withdrawal progressed it became better ordered and organized.

The stand at the Tagliamento was essential to the Italian plans, lest the troops in the mountains to the north be cut off, and the Third Army near the coast roughly handled before it could be withdrawn westward to safety. Especially it was necessary to gain time to organize and prepare the projected defensive position along the Piave. That Cadorna handled his problem well despite the loss, as reported by Berlin, of 180,000 men and 1,500 guns, is shown by the fact that on reaching the Tagliamento he was able to hold the position five days.

The Teutons reached the left bank Oct. 30, finding it apparently strongly held, and before seriously attempting a crossing brought up artillery and began reducing the bridgeheads retained by Italian rearguards on the eastern bank. Of these Dignano and Codroipo were reduced Oct. 30 and Latisano, near the coast, next day. After a bombardment and several days' delay the Teutons began crossing on the middle course of the river north of Pinzano Nov. 4, gaining the Italian side and pressing rapidly westward. Others followed, crossing downstream, the Italians evacuating the entire line of the river Nov. 4 and 5 and falling back 12 miles to the Livenza, a similar parallel stream. The withdrawals since Oct. 24, reduced the Italian front in Venetia about half.

The Italians did not offer serious resistance at the Livenza, but fell back rapidly behind the Piave, the Teutons following closely and reaching the line of defense on the heels of the retreating troops. Their infantry forded the Livenza Nov. 8 and the advance reached the Piave next day, from Susegana to the coast, and paused as at the Tagliamento, awaiting arrival of the trains carrying heavy materiel.

A new danger now threatened the Italian line in the appearance of a concentration in the Trentino, the right wing advancing down the Sugana while the left, crossing the divide, took Asiago. From here routes lead down the Brenta and Astico rivers to the region west of Venice, and an advance would cut off the entire left flank of the Italians on the Piave. For several days violent fighting followed about Asiago and in the Sugana valley, with some Teuton successes. The Teutons were heavily reenforced and captured Cismon Nov. 16, but were checked in a series of attacks against the heights of Badenecche and Torandecar. Farther west they advanced; but, after taking Quero, repeated attacks were halted Nov. 19 with great losses at the heights of Mts. Tomba, Fenera, and Grappa.

A force on the upper Piave cut off and captured 14,000 Italians defending Agardos, Belluna, and Feltre, giving the Teutons complete possession of territory north of the Piave-Asiago line.

Meanwhile General Cadorna was relieved as Commander-in-Chief by General Diaz. A war board consisting of Cadorna, General Foch and General Sir H. H. Wilson was organized, French and British troops and artillery, to replace the guns lost during the retreat, were rushed up and the Piave line prepared.

The Teutons bombarded Nov. 11 along the 30-mile front, and next day threw several battalions across at Zenson, eight miles from the coast, without making further progress.

They crossed at Grisolera, farther down, Nov. 13, and occupied the Italian bank to the sea. Further efforts to cross were repulsed, but Nov. 17 and 18 they again made crossings at Fajare and vicinity. They could not develop them, however, and the troops that crossed at Zenson were driven back with heavy losses.

Continuing their efforts to drive in the flank of the Piave line, the Teutons made heavy attacks on the Asiago plateau and on both sides of the Brenta, which failed, as did violent assaults Nov. 22 and 24 against positions near Meletta in the Asiago. West of the Piave, they gained temporary hold, Nov. 22, of positions on Mts. Tomba and Pertica, but counterattacks next morning recovered these peaks. The weather, unusually open, became more severe, hampering Teuton communications. The Austrians kept up a sustained and powerful artillery fire from the Asiago plateau to the upper Piave and were reported to be fortifying the line of the Tagliamento in their rear. British gunboats destroyed bridges carrying Teuton communications in the Piave delta.

After several days of quiet, Teuton efforts to turn the Piave line from the north were resumed Dec. 5. Attacking from north and west they successively took or cut off Mts. Badenecche, Tondarecar, Gifla, Meletta, Demo, and Castilgomberto and halted Italian reënforcements coming up from Valstagna. They took Monte Sisemal next day, having now driven the Italians from their main position on the Asiago plateau and advanced south to the Frenzela gorge, the next defensive position. Berlin claimed capture of 15,000 men and 60 guns.

Austrian troops attacked Dec. 11 between the Brenta and Piave against Col della Beretta, Col del Orso, Monte Spinoncia and the defenses of Calcina valley. According to Rome's announcement Dec. 11, the Italians retained practically their entire position. German troops gained a foothold on Mt. Spinoncia and Col Orso —"Bear Hill"—where the fighting was especially bloody. Austrian troops gained the Beretta positions but counter-attacks restored nearly all to Italian possession. The Teuton losses were very heavy, and while their gains were considerable they could not gain the lowlands and turn the Piave river line.

Repeated attacks in the Piave delta failed. Snowfall on the Asiago and among the mountains, much later in coming than usual, promises to hinder Teuton operations. French and British troops have arrived to aid in holding the northern line, while recent bloody Teuton reverses indicate that the offensive against Italy, like the drives against the Marne, at Verdun, and the submarine campaign, will result in another failure.

The War in Asia.—British forces continued their advance up the Tigris on Kut-El-Amara and Bagdad. By Jan. 21 they had cleared the right bank to Kut, while east of the confluence of the Hai and Tigris and along the west bank of the Hai gains were made Jan. 28. Kut lies in a loop of the Tigris, opposite the mouth of the Hai. The advance threatened the Turkish line of retreat, but after gains along the south bank Feb. 16 and 17 was checked at Sanniat on the north bank, 11 miles east of Kut. A heavy bombardment and renewed attacks, with a well-executed crossing of the stream above, caused the Turks to abandon Kut Feb. 24 and retreat toward Baghailah, pursued by British cavalry which captured prisoners and guns. Thousands of tons of steel rails and concrete ties made in Germany for the Bagdad railway were among the vast amount of stores captured.

General Maude pushed up the Tigris toward Bagdad, advancing 100 miles within two weeks after taking Kut. The Turks abandoned without a fight a prepared position at Ctesiphon, where Townshend's army was driven back in 1915.

The British cavalry fought Turkish rear guards at Lajj, at Azizieh, and again at the mouth of the Diala, a few miles below Bagdad. The infantry came up on March 8. Part crossed to the right bank of the Tigris while others engaged the Turks along the Diala, crossing by moonlight and attacking all along that front in a night bayonet assault. The troops crossing the Tigris drove back a force entrenched six miles south of Bagdad. The last Turkish position, 4 miles south of Bagdad, was attacked March 10, and that night the Turks withdrew from Bagdad. At daybreak, March 11, the British occupied the city. The supplies collected there had largely been removed or destroyed, but two-thirds of the Turkish artillery was captured. The British pursued the retreating Turks.

Petrograd reported the capture of Hamadan March 2 by a force operating westward through Persia to cooperate with the British in Mesopotamia. The Russians occupied Kangavar, Senne, and took Kermanshah March 12 and advanced toward Bagdad. Other Russian troops reached Van, in Armenia, while others were near Khanikin and also in contact with Turks 100 miles east of Bagdad.

March 7 London announced an invasion of Palestine was being made by Australian troops formerly on duty in the Sinai peninsula. They were approaching Gaza, but were halted at the Wadi Guzzah from March 26 to April 16 by Turks under General von Kress. By April 22 they were in contact with Turkish positions covering Gaza.

Meanwhile the British advance up the Tigris slackened temporarily and the Turks rallied. The British took Deli Abbas, commanding the peninsula between the Tigris and Diala April 2 and advanced up the Bagdad-Samara railroad to Balad. The Turks were defeated near Shiliyeh and fell back on Seraijik. The Eighteenth Turkish Corps, being defeated, fell back covering Samara, which was captured April 23 with a large amount of rolling stock and other supplies removed from Bagdad. General Maude pursued the retreating Turks, but after reaching the end of the railroad at Samara progress was slow and the offensive here and in Palestine closed for the time being about the end of May, summer heat making operations almost impossible.

Early in July Gen. Sir E. H. H. Allenby, organizer of the attack at Arras, took command of the forces in Palestine, long at a standstill south of Gaza.

Turkish troops drove the Russians on the Mesopotamian-Persian border from Khanikin and other points on the route to Bagdad, and also drove a force from Merivan, north of Kermanshah, forcing it across the Persian border late in August, but early in September this force recovered some of the lost ground.

General Maude attacked and captured Ramadieh Sept. 28, surrounding and capturing the entire Turkish force with large supplies and later driving back a force northeast of Bagdad on the upper Diala. Toward the end of November he destroyed supplies gathered near Tekoit and at bases on the Tigris, Euphrates, and Diala rivers by Gen. von Falkenhayn for a new offensive against Bagdad. The British suffered a severe loss in the illness and death of General Maude at this time.

Troops under General Allenby defeated Turkish cavalry west of Beersheba July 19 and captured the place Oct. 31. A sudden attack from the south and west by infantry and from the east by cavalry, after a wide turning movement executed at night, resulted in the capture of Gaza, Nov. 7, after a series of fights, the Turks falling back on Jerusalem. The British moved north, the right from Beersheba, the left up the Mediterranean coast on Joppa, capturing Askalon. Joppa was taken Nov. 17 by Australian and New Zealand mounted troops. Advancing northward the British reached Kuryet-el-Nat, six miles west, Nov. 20, and Scottish troops stormed Beit Likia, five miles northwest of Jerusalem advancing well north of the Joppa-Jerusalem railroad and the Turkish line of retreat on Damascus. By Nov. 25 they were three and a half miles west of Jerusalem.

Advancing through the hills west of the Dead Sea, the British took Hebron, advanced north to Bethlehem, and attacked Jerusalem from the west and south Dec. 8, cutting off its defenders and compelling the surrender of the city Dec. 9. General Allenby entered the city on foot next day.

Aside from the moral effect and sentimental reasons, the captures of Joppa and Jerusalem are important as furnishing a base for operations against Damascus and Aleppo, render well-nigh impossible a renewed campaign in Mesopotamia, end the dream of a German railroad to Bagdad, and protect the Suez canal.

Russ-Rumanian Front.—An attack by the Teuton Danube army was repulsed by Russians eight miles west of Braila Jan. 1, whereupon the Teutons entrenched, and mobile operations thereabouts temporarily ceased.

Jan. 2 Berlin reported capture of Mt. Faltucana and advances along Ortuz and Susitza valleys and in the Bereck mountains, thus threatening Focsani from the north and west. Von Mackensen advanced on Focsani from the southwest, and the Ninth Army reached Mera and Pintecesti Jan. 4.

The Teutons advanced on Macin, on the right of the Danube, a key in the ten-mile front from Macin to Racelu in the bend of the Danube, Gen. Sakharof's last good line of defense in the bridgehead across the Danube from Galatz. Macin was captured by assault Jan. 3 after house-to-house fighting. The advance reached Jipila, a strong point on the Russian line across the peninsula, forcing the defenders to withdraw across the Danube, the enemy following through the marshes. Jan. 5 the advance reached the river bank opposite Galatz and Braila, the largest port and city on the lower Danube.

Russian forces south of the Sereth withdrew the night of Jan. 4-5 with heavy rear-guard losses. The invaders assaulted and took Rimniceni, Tartaru, and a fortified line connecting them and after temporary checks advanced on a 30-mile front.

Meanwhile Mackensen continued his advance on Focsani, capturing it Jan. 8 by converging attacks. Above Focsani Teutons attacked the Russian line of retreat, capturing Garleaska.

The Russians made desperate efforts to hold the area around Mihalea, Laburtea, and Vadeni as a foothold for future operations against Braila. The Teuton lines now extended from the eastern Carpathians to the Danube, giving them all the important positions on the right bank of the Sereth from the Putna to this small area near Braila held by the Russians. Mackensen successfully attacked Vadeni Jan. 12 and 13; the Bulgars took Mihalea on the Russian right; a Turkish force aided in clearing out the defenders, driving them back into the fortified region around Galatz.

The Rumanians in the Kasino valley were forced back. Teuton gains in the Uzul and Susitza valleys continued to Jan. 14, when their attacks east of Focsani and in the Trotus and Putna valleys were repulsed.

Rumanian troops attacked in the Kasino region and Petrograd claimed the capture, Jan. 27, of 1,158 Austro-Hungarians on the Rumanian-Bukovinian border. Teuton attacks forced a Russian withdrawal towards Jacobeni Feb. 12 and the Central Powers kept up a great show of activity all along the front with small, scattered attacks. Severe cold had caused a slackening of operations, the pressure in Moldavia and further south relaxed and a threatened invasion of Moldavia and southwestern Russia was postponed, probably due to urgent need of troops on other fronts.

More open weather allowed minor Teuton advances. March 27 Petrograd reported the re-capture of Vadeni and Halu in the bridgehead near Braila. Rumania had been thoroughly overrun and her army all but eliminated for the time being.

French aviators and British motor cars coöperated with the Russians at the mouth of the Sereth. French sources estimate the Teuton strength engaged in the invasion as about 572,000 men, 200,000 of whom were Bulgars and 72,000 Turks.

Russian Front.—Colder weather allowed the Russians to start an offensive on the Aa and its marshes Jan. 5, capturing trenches east of Kaluzem beyond the western end of Lake Babit. Attacks farther south and north of Krasshin failed. German attacks between the Aa and the Tirul marshes forced Russians back Jan. 23 with loss of 1,500 prisoners. Further attacks failed. German gains from Jan. 25 to 30 neutralized previous Russian advances on the Aa near Riga and Mitau. German forces attempting to advance near Kaluzem and along the Tirul marshes to get possession of the roads through the marshes for use later were repulsed by fire from armored motor cars brought up over the frozen ground.

Teuton forces were active in Galicia and Volhynia, bombarding Stanislau Feb. 9.

After a period of comparative quiet except for disorders in Petrograd and a three days' censorship of all news, Petrograd announced March 15 the overthrow of the Czar's government and complete success of a revolutionary provisional government.

General Alexieff was named as the new commander-in-chief. Germans captured 9,630 prisoners, 15 guns and 150 machine guns in an attack April 6 on the Toboly bridgehead. Brody was bombarded April 14, and the Russians blew up bridges across the Styr.

The situation on the western front possibly prevented the Germans from taking advantage of Russia's unsettled condition. They attempted to fraternize with Russian troops and to this end suspended operations. The provisional government denied making offers of a separate peace.

Russian troops attacked near Focsani May 4. Petrograd claimed that fraternization had largely ceased and German bombardments were resumed. Great difficulty was experienced in keeping soldiers at their posts. By order of the government officers were no longer saluted and soldiers voted on whether they would carry out orders given them. Generals Korniloff, Brusiloff and Rusky resigned because of interference by the Council of Workmen and Soldiers with military orders. The Petrograd garrison and troops in Rumania voted to resume the offensive and the resignations were withdrawn, General Brusiloff succeeding Alexieff as commander-in-chief.

Berlin reported local Russian attacks June 17 near Lutsk and Zlochor and in the Carpathians, and forecasted an offensive in Galicia, where the Russians faced Halicz on the south and east following Brusiloff's repulse in the fall of 1916. M. Kerensky, Minister of War of the provisional government, had been addressing the troops, who voted to attack.

July 1 the Russians advanced from the direction of Tarnopol toward Lemberg, masses of infantry advancing in face of heavy Teuton fire and carrying three lines of trenches at Koninchy, capturing 164 officers, 8,400 men and a fortified village menacing Brzezany, an objective, guarding the road to Lemberg.

The other principal attack was southeast of Brzezany. The attacks continued next day, reaching Zborow, capturing 6,300 prisoners and forcing the Teutons back to the right bank of the Little Stripa. From July 3 to 6 the attack was resumed on the hills south of Brezezany with considerable success. Near Zborow attacks were resumed in spite of successful Teuton counter-attacks.

Operations east of Lemberg now ceased while an attack south of Halicz developed. West of Stanislau troops advanced toward the Lomnica. The movement at the extreme left was halted and on the 8th and succeeding days attacks and advances to the west were made against Teuton positions between Soltovina and Halicz.

The left wing approached the Lomnica, the right entered Halicz July 10, capturing 10,000 prisoners and throwing detachments across the Dniester. The extreme left at Soltovina forced the Austrians back and pursued them up the Lomnica, capturing Kalusz July 11 after severe fighting. The Lomnica was swollen by rains and the Russians were compelled to give up positions across the river here and at Novica, as other portions of the line could not advance. Bombardments north of Halicz, south of Brzezany, and attacks at Novica July 17 and 18 were unable to regain those places.

The Teutons launched a counter-offensive against the Russian front from Zborow to Pebaki, about 20 miles, on July 9. Desertions were numerous and entire Russian units refused to fight or withdrew without orders, forcing others to fall back. The Teutons sent part of their forces south along the Strypa and Zlota Lipa rivers toward the Dniester, capturing Jezernay and Podhajce with large quantities of stores.

The Russians held a ten-mile line

from Buczacz west until July 24, the delay allowing Russian withdrawals from Stanislau, Halicz and Nadrorna.

The Teutons captured Tarnopol July 24, a division of its defenders having abandoned its post before the enemy appeared, and the Teutons then crossed the Sereth above Tarnopol without effective resistance. Elsewhere Russian and Rumanian troops attacked to create a diversion but without much effect.

The provisional government restored the death penalty and took other severe measures to restore order and discipline, but with little success. The Teutons advanced from Tarnopol and forced the Russians back across the Zbrocz and entered Russian territory 70 miles east of Halicz, where the Russians had been two weeks earlier.

Russians in Bukowina withdrew eastward, and farther south gave up Kutz, the Teutons forcing them back between the Pruth and Dniester and threatening to overrun Moldavia west of the Sereth. The Russians withdrew parallel to the south bank of the Dniester, abandoning Czernowitz Aug. 3, and blowing up the bridge across the Pruth. Teuton forces advanced eastward in the valley of the Sereth, forcing the Russians back toward Kimpalong, while 100 miles south a force operated north from Focsani up the left bank of the Sereth, threatening a Rumanian force that had been active in that region.

The force that had driven the Russians from Galicia withdrew back of the Zbrocz early in August, presumably for political reasons connected with hopes for a separate peace based on "no annexations."

The advance of Mackensen's forces from Focsani was checked by the Rumanians near Marasechti Aug. 15 and 16, after heavy fighting in Moldavia along the Sereth and Trotus.

A sudden bombardment Aug. 21 gained from the Russians much of the ground along the Aa and the Tirul marshes won last winter. A German advance across the Dvina, about 25 miles above Riga resulted, Sept. 2, in a Russian withdrawal from Riga and retreat along the Baltic coast. German vessels aided, shelling the coast towns, while land forces pushed the retreating Russians, capturing many guns and much property, but finding few Russian prisoners. Possibly because of climatic conditions the Germans did not care to press an advance on Petrograd so late in the year.

There was desultory fighting beyond Riga for several days. Bridges were thrown across the Aa, but plans for an advance were not pushed and under Russian attacks the German advanced posts were withdrawn Sept. 12.

Dissatisfied with the state of discipline, due to abolition of punishment and other socialistic ideas in the army, Gen. Korniloff marched part of his forces on Petrograd to force the provisional government from power. He was backed by Cossack and Asiatic Mohammedan troops, but the movement failed and he was arrested and imprisoned.

Russia was proclaimed a republic Sept. 14 by the provisional government, M. Kerensky being Premier of a cabinet of five ministers.

After a period of indecisive operations in Moldavia, Rumanian and Russian forces attacked south of Grozechti, and, a Teuton attack at Marasechti as a counter-offensive failing, the Rumanians attacked near Muncelui and Varnitza and repulsed attacks in turn.

The Germans by a sudden thrust up the Dvina from Friedrichstadt captured Jacobstadt Sept. 21. A German sea expedition seized Oesel Island and part of Moon Island between the Gulf of Riga and the Baltic Oct. 12, and occupied Arensberg next day. Russian torpedo boats drove back German vessels.

The unsettled state of Russian affairs was not improved when the Kerensky government was overthrown Nov. 8 by the Bolsheviki, or Maximalists, who favor an armistice and immediate peace. The withdrawal of German and Austrian forces for the Italian offensive afforded an opportunity for Russian activity which they seemed unable or unwilling to undertake, and as the year closes they are seeking an armistice with the Central Powers.

Serbian-Greek Front.—During the

early part of the year Entente war vessels kept up the blockade of the Greek ports. King Constantine refused to withdraw Greek troops from Thessaly, and an advance there by Allied troops, having the Greeks in rear, was not advisable.

During the spring and summer there were minor activities around Lake Dorian, on the Vardar, in Macedonia and between Lakes Ochrida and Presba. French gains about Monastir were the most important recorded, and about the only operations of importance.

Greek Venizelists aided the French May 4 in driving Bulgars from three miles of trenches.

The Italians made gains in Albania and occupied Janino June 10. June 10, Athens announced the abdication of King Constantine in favor of his second son, who favored the Allied cause. French troops advanced from Salonica and Monastir south and west through Greek Macedonia and Thessaly, British troops aiding in the occupation of Thessaly and the Piraeus, and Athens was occupied by French, British and Italian troops at end of June.

According to a news item the prolonged quiet and often-postponed offensive arises from lack of material for the Greek army of 300,000 men. It is now announced that the Allies will supply the equipment this winter and the offensive will begin next spring, when the Greeks will be ready to aid Gen. Sarrail. A French commission is assisting in organizing and training the Greek forces.

The War in German East Africa.—Native troops brought over the Indian Ocean landed in Lukeledi river June 10 under protection of fire from warships, and took the settlement of Meweka. As a result of last year's operations, German troops were confined to the southern part of the colony, and retreat from the coast was limited by Portuguese territory to the south and west by Lake Nyassa. Sept. 8 the Germans were driven from Mponda and expelled from Portuguese territory.

Early in December General Vandeventer, the British commander, reported German East Africa completely conquered, the last of the German forces having escaped into adjacent Portuguese territory.

Operations at Sea.—Satisfied with its "victory" off Jutland last year, the German High Seas Fleet have preferred to remain under the safe shelter of the Kiel Canal's defenses during the past year. Their small craft, especially submarines, have been active and continue to do much damage.

As the year closed, effective cooperation between British, French, and American fleets was restricting submarine losses and sending an increasing number of the sea-pirates to the bottom. Urgent efforts in shipbuilding were becoming apparent in the launching of a greatly increased amount of tonnage, approaching in amount losses by submarines, so that the situation was well in hand. The British policy of withholding information as to actual destruction of submarines has been continued because of its moral effect on German crews.

There have been few naval engagements, and those between light craft engaged on patrol duty or raiding, the principal losses being due to submarines. Russian cruisers defending the waters near Riga and channels to Kronstadt are reported to have sunk several German vessels, the Russian battleship *Slava* being sunk. Twice during the year German cruisers have made sorties, attacking and sinking destroyers, and merchantmen being convoyed across the North Sea.

The battleship *Cornwallis* was torpedoed Jan. 11 in the Mediterranean, and Jan. 23 British destroyers repulsed in two sharp engagements German destroyers attempting to leave Zeebrugge, sinking seven. A Russian squadron raided the Anatolian coast Jan. 13.

The Germans began unrestricted submarine warfare Feb. 1 as a desperate bid for the victory they could not win on land. They sank ten vessels that day. While for a time the situation appeared serious it was brought under control, the most important result of the submarine warfare being the entrance of the United States into the war.

The French destroyer, *Cassini*, was torpedoed Feb. 28, and the battleship

Danton March 19, both in the Mediterranean, while the British hospital ship, *Asturias*, was torpedoed without warning March 20, and the hospital ship *Glouster Castle*, March 30.

The *Möwe* returned to her German base March 22 after a second cruise during which she captured 27 vessels, including the *Yarrowdale*.

The *Aztec*, torpedoed off Ushant April 2, was the first armed American merchantman to be sunk.

The hospital ship *Salta* was sunk by a mine April 10 and the hospital ships *Donegal* and *Lanfranc* torpedoed without warning April 17, British and German wounded being drowned.

Two, possibly three, German destroyers were sunk April 21 in a raid on Dover. A French destroyer was sunk near Calais the same day.

The destroyers *Swift* and *Broke* drove off German destroyers in the North Sea April 25, sinking several but being themselves badly damaged.

The troopships *Ballarat* and *Transylvania* were torpedoed April 25 and May 4, the latter with loss of 413 lives.

There was a running fight between English and Dutch coasts May 10, and on May 12 British vessels bombarded Zeebrugge. Naval vessels destroyed Zeppelin *L-26* over the North Sea May 14. In the Adriatic a German submarine and Austrian vessels sank 14 Allied drifters and torpedoed the *Dartmouth*, which reached port. The hospital ship *Dover Castle* was torpedoed in the Mediterranean May 26, and May 29, 147 Turkish vessels with supplies were destroyed by a Russian fleet raiding the Anatolian coast. An American gun crew on the merchantman *Silvershell* sank a submarine in the Mediterranean May 30, while the French submarine *Circe* destroyed a large Austrian submarine off Cattaro June 2.

A British destroyer in a fight with six German destroyers June 5 sank the *S-20* and damaged another. Patrol boats destroyed the Zeppelin *L-43* over the North Sea June 14, and naval airmen the *Z-48* next day.

The Japanese destroyer *Sakaki*, on convoy duty, was damaged by a torpedo June 16 while attacking a submarine in the Mediterranean. She had done effective rescue work when the *Transylvania* was sunk.

A mine sent the French cruiser *Kleber* to the bottom June 27.

American destroyers convoying troop ships to France repulsed attacking submarines June 22, 25, and 26, sinking at least one. American patrol vessels have been coöperating with Allied fleets in anti-submarine work off British and French coasts and in the Mediterranean, winning high praise for skillful and effective work.

British destroyers captured four vessels and forced two ashore when German merchantmen attempted to run the blockade from Rotterdam to a German port. The dreadnought *Vanguard* was destroyed by an internal explosion July 13, only three of the crew escaping.

A German submarine stranded off Calais July 26 was set on fire by the crew, but the fire was put out and crew and boat captured by Belgian cavalry.

The British cruiser *Ariadne* was torpedoed July 30. British light forces off Jutland sank four German mine sweepers Sept. 1. A German submarine shelled Scarborough Sept. 4, firing 30 rounds before running away while British warships bombarded naval works at Ostend Sept. 22. The British cruiser *Drake* was torpedoed Oct. 2, sinking in shallow water after reaching port.

A mutiny occurred among sailors on four German warships at Wilhelmshaven early in September, a number of officers being thrown overboard and killed.

Mines dropped by a submarine mine-planter sank the Russian destroyer *Ochotnik* Sept. 26.

An American destroyer foundered Oct. 4 and another was damaged by a submarine Oct. 16, while the transport *Antilles* was sunk while returning to the United States Oct. 17.

Six British and French destroyers engaged three German destroyers and 17 air planes off the Belgian coast, Oct. 27, forcing them to withdraw.

The armed merchantman *Rochester* was sunk Nov. 2; and the *Alcedo*, a converted yacht on United States patrol duty in the war zone, was sunk

Nov. 5. The destroyer *Chauncey* was sunk when rammed by a transport, 3 officers and 18 men being lost.

In an engagement between British and German light forces in Helgoland Light, Nov. 17, a German sweeper was sunk, a German cruiser withdrew battered and in flames and another was damaged.

The U. S. destroyer *Jacob Jones* was torpedoed and sunk by a submarine Dec. 7 with loss of 66 lives.

The United States in the War.—A situation long at the breaking point culminated with the announcement Feb. 1 by the German government of an unrestricted submarine warfare. Count von Bernstorff was given his passports next day, diplomatic relations were severed, and the President addressed Congress on the state of affairs. April 6 Congress passed a declaration of war against Germany.

The fleet was mobilized and placed on a war footing, United States ports were thrown open to Allied warships, restrictions on armed ships in ports removed, ringleaders in German plots were arrested and alien enemies interned. Ninety-one interned German ships, totalling 629,000 tons, were seized next day.

Austria-Hungary severed diplomatic relations April 8.

Congress voted an immediate war credit of seven billions of dollars April 14, authorizing loans of three billions to Allied nations.

An act providing for raising troops by selective draft was passed, and signed by the President May 18, June 5 being set as the date for the registration of all men between 21 and 30. Almost ten million men of draft age registered.

Meanwhile on May 15 the President under authority of the National Defense Act of June 3, 1916, directed the immediate organization of the four additional increments of the Regular Army and the recruiting to war strength of Army, Navy, and Marine Corps. The Coast Guard and Marine Hospital service were transferred from the Treasury Department to the Navy, and National Guard troops began to be called into Federal service. Great activity in recruiting, mustering into service and training the additional officers and men followed, and arrangements were made for supplies for over a million men and for temporary barracks at various places throughout the country to house them while under training.

As a result of representations made by the French and British missions it was announced that Major-Gen. John J. Pershing and about 25,000 men of the Regular Army would be sent to France as soon as possible.

Mr. Herbert Hoover, formerly head of the Commission for Belgian Relief, was appointed food administrator May 19. Active measures were taken to insure the greatest possible acreage being planted, and the people encouraged in every way to cultivate gardens and to conserve the food supply. Other commissions were named to coördinate various war activities and regulate supplies. A shipping board, with extensive powers and unlimited funds at its disposal was named to arrange for and expedite the building of steel and wooden ships and to regulate the distribution of shipping in an effort to overcome as far as possible Germany's submarine campaign.

The first American combatant unit to leave for the front was the American Field Service, composed largely of Cornell men, which left Paris May 25.

The arrival of American warships off the coast of France was announced June 7. The collier *Jupiter* arrived about the same time with a large cargo of food supplies, including 11,500 tons of wheat, for the American forces. Destroyers under Vice-Admiral Sims had been coöperating with the British navy for some time.

General Pershing and staff reached "a British port" June 8, and began measures for the prompt entry of the United States into active war operations. He reached Paris June 13 and began arranging the details of the arrival of American troops. Certain technical troops reached their cantonments near Paris about the same time.

American medical units took over control of six British field hospitals in France June 22.

The safe arrival of the first contingents of American combatant troops at a French port after encounters at sea with German submarines June 22 and 26 was announced June 27. Additional troops arrived July 28, and announcement was made that other troops would follow as fast as ships were available. A large artillery contingent arrived Sept. 13.

The drafted men of the National Army began reporting early in September at the various camps built for their training, while the National Guard reached their cantonments between Aug. 15 and Sept. 15. Officers for the new National Army were provided by promotions from officers and enlisted men of the Regular Army and men trained at camps held throughout the country during the summer.

Announcement was made Oct. 27 that, in continuation of their training and as a nucleus for instruction later, several battalions of infantry from the first contingent had been sent into the first line trenches in France, supported by American batteries. Both infantry and artillery were working alongside veteran French troops.

The first German prisoner of war taken by the Americans died Oct. 29, being shot while trying to escape from a patrol in "No Man's Land."

A front-line salient occupied for instruction by a company of American infantry was raided by German "shock" troops Nov. 3. A heavy barrage cut the salient off from help. Three men were killed, five wounded, and 12 captured or missing. The German losses are not known. Bitter hand-to-hand fighting occurred. One wounded German left behind in the American trenches was captured. The French commander of the sector praised the bravery and stubborn fighting of the Americans and special honors were paid at the burial of the three dead soldiers, Privates Thomas F. Enright of Pittsburgh, James B. Gresham of Evansville, Ind., and Merle D. Hay of Glidden, Ia.

Nov. 7 there was an active artillery action, and Nov. 11 the Germans attempted a raid near the scene of the former one, but were driven off by artillery and machine-gun fire. An American patrol reconnoitering in "No-Man's Land" ambushed a German patrol Nov. 14, and exchanges of artillery fire were constant Nov. 16 to 20.

American reserve engineers assigned to railroad work assisted the British in their advance on Cambrai Nov. 20, and when the German counter-assaults drove the British back the engineers took rifles and aided in holding the British lines, being warmly praised for their endurance, courage and skill.

National Guard troops giving representation in France to every state in the Union had reached France Nov. 30, the movement having been under way since Oct. 15. The safe convoy of these and the former contingents without loss of a man is a high tribute to Rear-Admiral Gleaves and the officers and men under him.

An anomalous situation was terminated Dec. 7 by a declaration of war against Austria-Hungary.

IV. THE NATIONAL ADMINISTRATION

THE PRESIDENT AND VICE-PRESIDENT

President.—Woodrow Wilson, Democrat, of New Jersey, inaugurated twenty-eighth President of the United States on March 4, 1913, was re-elected on Nov. 7, 1916, for a second term of four years beginning March 4, 1917.

The President and Vice-President are elected for terms of four years by the state electoral colleges, whose membership is based on the Congressional apportionment. This apportionment is revised after each decennial census, as shown in the table in the YEAR BOOK for 1912 (p. 159). The official figures of the popular and electoral votes in the Presidential elections of 1908, 1912, and 1916 are given in the YEAR BOOK for 1916 (p. 170). The salary of the President is $75,000, with an allowance of $25,000 for traveling expenses.

Secretary to the President.—Joseph Patrick Tumulty, of New Jersey. The General Deficiency Appropriation Act continues the salary of the Secretary to the President at $7,500 per year, to which it was raised from the statutory amount of $6,000 in 1911 at the request of President Taft.

Vice-President.—Thomas Riley Marshall, Democrat, of Indiana, inaugurated Vice-President of the United States on March 4, 1913, was re-elected on Nov. 7, 1916, for a second term of four years beginning March 4, 1917.

The Vice-President presides over the Senate, with no vote except in case of a tie. His salary is $12,000. The President *pro tempore* of the Senate, who presides in the absence of the Vice-President, is Senator Willard Saulsbury (Del.).

EXECUTIVE DEPARTMENTS

Ten Cabinet officers, constituting the President's advisory council, each in charge of one of the great Departments of the Government, are nominated by the President and confirmed by the Senate, for a term subject to the President's pleasure. The salary of the Cabinet officers is $12,000 each.

With the exception of the Secretary of State (appointed 1915), the Attorney-General (appointed 1914), and the Secretary of War (appointed 1916), the members of the present Cabinet were nominated by the President and confirmed by the Senate on March 5, 1913. By Act of Congress, in the case of vacancy in office of President through the death or removal of both President and Vice-President, the Cabinet officers succeed to the Presidency in the order indicated below.

DEPARTMENT OF STATE

Secretary of State.—Robert Lansing, N. Y.

Charged with negotiations relating to foreign affairs.

Counselor.—Frank Lyon Polk, N. Y. $7,500.

Assistant Secretary.—William Phillips, Mass. $5,000.

Mr. Phillips, formerly Third Assistant Secretary, was confirmed on Jan. 24, 1917, succeeding John E. Osborne, resigned Dec. 9.

Second Assistant Secretary.—Alvey A. Adee, D. C. $4,500.

Third Assistant Secretary.—Breckinridge Long, Mo. $4.500.

Mr. Long, a lawyer of St. Louis, was confirmed on Jan. 24, 1917, succeeding William Phillips, appointed Assistant Secretary.

Director of the Consular Service.—Wilbur J. Carr, N. Y. $4,500.

Solicitor.—Lester H. Woolsey, New York. $5,000. Appointed in 1917, to succeed Cone Johnson, Texas.

Foreign Trade Adviser.—Marion Letcher, Ala. $4,500.

Adviser on Commercial Treaties.—William B. Fleming, Ky. $4,500.

Bureau of Accounts.—Chief, William McNeir, D. C. $2,300.

Bureau of Appointments.—Chief, Miles M. Shand, N. J. $2,100.

Bureau of Citizenship.—Chief, Richard W. Flournoy, Jr., Md. $2,100.

Consular Bureau.—Chief, Herbert C. Hengstler, Ohio. $2,250.

Diplomatic Bureau.—Chief, Sydney Y. Smith, D. C. $2.250.

Bureau of Indexes and Archives.—Chief, David A. Salmon. $2.100.

Mr. Salmon was appointed in 1916, succeeding John R. Buck.

Bureau of Rolls and Library.—Chief, John A. Tonner, O. $2,100.

Division of Latin-American Affairs.—Chief, Jordan H. Stabler. $4,500.

Mr. Stabler was appointed in 1915, succeeding J. Butler Wright.

Division of Mexican Affairs.—Chief, Leon J. Canova. $4,500.

Division of Far-Eastern Affairs.—Chief, Edward T. Williams. $4,500.

Division of Near-Eastern Affairs.—Chief, Albert H. Putney. $3.000.

Division of Western European Affairs.—Chief, Frederick A. Sterling.

Mr. Sterling was appointed in 1916, succeeding William W. Smith.

Division of Information.—Chief, John H. James. $3,000.

TREASURY DEPARTMENT

Secretary of the Treasury.—William Gibbs McAdoo, N. Y.

Charged with management of the national finances. He prepares plans for improvement of the revenue and support of the public credit; superintends collection of the revenue; grants warrants for all moneys paid from and into the Treasury; controls construction of public buildings; coinage and printing of money; and the administration of the coast guard service, and the public health service; *ex officio* chairman of the Federal Reserve Board and of the Federal Farm Loan Board. Appointed Dec. 26, 1917, Director General of Railroads.

Assistant Secretaries.—R. C. Leffingwell, N. Y., Oscar T. Crosby, Va., James H. Moyle, Utah, Leo S. Rowe, Pa., Thos. B. Love, Texas. $5.000 each. The appointments of Messrs. Leffingwell and Love were confirmed by the Senate Dec. 14.

Supervising Architect.———— ———, $5,000. Charged with superintending the construction and repair of public buildings.

This office has been vacant since June 30, 1915.

Engraving and Printing.—Chief of Bureau, James L. Wilmeth, Ark., $6,000. Appointed in 1917, to succeed Joseph E. Ralph, Ill. Produces all the securities and similar work of the Government printed from steel plates.

Secret Service.—Chief, ——— ———. $4,000. Charged with detection of counterfeiting, and similar frauds on the Government. Former Chief, William J. Flynn, N. Y., resigned Dec., 1917.

Comptroller of the Treasury.—Walter W. Warwick, O. $6,000. Construes the laws relating to appropriations and methods of rendering and stating accounts.

Treasurer of the United States.—John Burke, N. D. $8,000. Charged with the receipt and disbursement of all public moneys deposited in the Treasury and sub-treasuries and in national bank depositories.

Comptroller of the Currency.—John Skelton Williams, Va. $5,000. Has supervision of the national banks, their examination and reports; the preparation and issue of national bank circulation; the redemption and destruction of national bank notes. *Ex officio* a member of the Federal Reserve Board; and in this capacity draws a salary of $7,000 in addition to the salary of $5,000 attached to the office proper.

Internal Revenue.—Commissioner, Daniel C. Roper, S. C. $6.500. Appointed in 1917 to succeed Wm. H. Osborn, N. C. General supervision of the collection of all internal revenue taxes, including the income tax, and the enforcement of internal revenue laws.

The Mint.—Director, Raymond J. Baker. $5,000. Appointed in 1917. to succeed F. J. H. von Engelken, Fla. General supervision of the mints and assay offices.

Farm Loan Board.—Created by the Farm Loan Act of July 17, 1916, for the administration of the Federal rural-credits system, established by the Act (see 1916 YEAR BOOK XVII, *Agriculture*). Composed of the Secretary of the Treasury, chairman *ex officio*, and four appointive members (full term, eight years; salary $10,000 per annum). The appointive members of the Board, with the terms for which they are commissioned, are as follows: George W. Norris, Pa., Farm Loan Commissioner (four years); Herbert Quick, W. Va., (eight years); W. S. A. Smith, Iowa (six years); Charles E. Lobdell, Kan. (two years). Secretary, W. W. Flannagan.

Public Health Service.—Surgeon-General, Rupert Blue. $6,000. Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious diseases; supervision of the quarantine service of the United States, and of the marine hospitals.

Coast Guard.—Captain Commandant, Ellsworth P. Bertholf. $5,000.

WAR DEPARTMENT

Secretary of War.—Newton Diehl Baker, Ohio.

Charged with supervision of national defense and expenditures for military purposes.

Assistant Secretary of War.—Major Benedict Crowell, Ohio. $5,000. Succeeding William M. Ingraham.

The General Staff.—Chief, Major-Gen. Tasker H. Bliss. $10,000. Succeeding Major-Gen. Hugh L. Scott. Charged with preparation of plans for the national defense, and the promotion of the efficiency of the Army.

The chiefs of the military bureaus are as follows:

Adjutant-General.—Major-Gen. Henry P. McCain. $8,000.

Inspector-General.—Major-Gen. E. A. Garlington. $8,000.

Major-Gen. John L. Chamberlain was confirmed on Jan. 15, 1917, to succeed General Garlington on his retirement on Feb. 20, 1917.

Judge-Advocate-General. — Major-Gen. E. H. Crowder. $8,000.

Acting-Quartermaster-General. — Major-Gen. George W. Goethals. $8,000.

Surgeon-General.—Major-Gen. William C. Gorgas. $8,000.

Chief of Coast Artillery.—Major-Gen. Erasmus M. Weaver. $8,000.

This office was created by the Fortifications Appropriation Act of July 6, 1916.

Chief of Engineers.—Major-Gen. William M. Black. $8,000.

Acting Chief of Ordnance.—Major-Gen. Charles B. Wheeler. $8,000.

Chief Signal Officer. — Major-Gen. George O. Squier. $8,000.

Major-Gen. George O. Squier was confirmed on Jan. 19, 1917, to succeed General Scriven on his retirement on Feb. 13, 1917.

Chief of Bureau of Insular Affairs.—Major-Gen. Frank McIntyre. $8,000.

Chief of Militia Bureau.—Major-Gen. Wm. A. Mann. $8,000.

DEPARTMENT OF JUSTICE

Attorney General.—Thomas Watt Gregory, Tex.

Represents the United States in all legal matters.

Solicitor-General.—John William Davis, W. Va. $10,000. Charged with the business of the Government in the Supreme Court and in state courts.

Assistant to the Attorney-General.—George Carroll Todd, N. Y. $9,000. Charged with matters arising under the federal anti-trust and interstate commerce laws.

Assistant Attorney-General.—One at $8,000 (customs division) and six at $7,500.

POST OFFICE DEPARTMENT

Postmaster-General.—Albert Sidney Burleson, Tex.

Has direction and management of the Post Office.

First Assistant Postmaster-General.—John C. Koons, D. C. $5,000. Charged with postmasters' appointments; salaries and allowance; city delivery service.

Second Assistant Postmaster-General.—Otto Praeger, Tex. $5,000. Charged with railway adjustments, miscellaneous transportation, foreign mails, railway mail service, inspection, equipment.

Third Assistant Postmaster-General.—Alexander M. Dockery, Mo. $5,000. Charged with financial system, stamps, money orders, registered mails, classification of domestic mail matter, redemption, postal savings.

Fourth Assistant Postmaster-General.—James I. Blakslee, Pa. $5,000. Charged with rural mails, supplies, dead letters, post route maps.

NAVY DEPARTMENT

Secretary of the Navy.—Josephus Daniels, N. C.

Charged with direction of the Navy and superintendence of construction, equipment, and employment of vessels of war.

Assistant Secretary.—Franklin D. Roosevelt, N. Y. $5,000.

Office of Naval Operations.—Chief, Adm. William S. Benson. $10,000. Charged with the operations of the fleet and with the preparation and readiness of plans for its use in war.

Bureau of Yards and Docks.—Chief, Rear-Adm. Frederic R. Harris. $8,000. Charged with the construction and maintenance of docks and naval buildings.

Bureau of Navigation.—Chief, Rear-Adm. Leigh C. Palmer. $6,000. Charged with the education and supervision of line officers and of enlisted men, marine surveys, and the supervision of the Naval Militia.

Bureau of Ordnance.—Chief, Rear-Adm. Joseph Strauss. $6,000. Charged with supervision of the Torpedo Station, magazines on shore, and with the manufacture of explosives, arms and equipment.

Bureau of Construction and Repair.—Chief Constructor, David W. Taylor. $6,000. Charged with the design, construction, care, and repair of ships.

Bureau of Steam Engineering.—Engineer-in-Chief, Rear-Adm. Robert S. Griffin. $6,000. Charged with designing, building and repairing machinery for naval ships.

Bureau of Supplies and Accounts.—Paymaster-Gen. Samuel McGowan. $8,000. Charged with the supply of funds for disbursing officers, and the purchase of all naval supplies.

Bureau of Medicine and Surgery.—Surgeon-General, William C. Braisted. $8,000. Control of naval hospitals and hospital ships.

Judge-Advocate-General. — Capt. Wm. C. Watts. $5,000. Charged with supervision of all legal aspects of the Navy personnel. *Solicitor,* Graham Egerton. $4,000.

Captain Watts was confirmed on Jan. 5, 1917, succeeding Capt. Ridley McLean.

Marine Corps. — Commandant, Col. Chas. A. Doyen. $8,000.

Department of the Interior

Secretary of the Interior.—Franklin Knight Lane, Cal.

Charged with patents, pensions, public lands and parks, education, Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Alexander T. Vogelsang, Cal. $5,000.

General Land Office.—Commissioner, Clay Tallman, Nev. $5,000. Charged with the survey, management and disposition of the public lands.

Patent Office.—Commissioner, James T. Newton, Ga. $5,000. Succeeding Thomas Ewing, N. Y. Administration of the patent laws, and supervision of the registration of trade-marks.

Pension Office.—Commissioner, Gaylord M. Saltzgaber, Ohio. $5,000. Supervision of adjudication of claims arising under laws granting Army or Navy service pensions.

Office of Indian Affairs.—Commissioner, Cato Sells, Tex. $5,000. Has charge of the Indian tribes of the United States (exclusive of Alaska).

Bureau of Education.—Commissioner, Philander P. Claxton, Tenn. $5,000. Collects statistics and general information regarding education; has charge of the schools for native Alaskan children; and administers the endowment fund for colleges of agriculture and mechanic arts.

Geological Survey.—Director, George Otis Smith, Me. $6,000. Charged with classification of the public lands and examination of the geologic structure, mineral resources, and the mineral products of the national domain.

Reclamation Service.—Director and Chief Engineer, Arthur P. Davis. $7,500. Charged with the survey, construction, and operation of the reclamation and irrigation works in arid states, authorized by the act of June 17, 1902.

Bureau of Mines.—Director, Vannoy H. Manning, Miss. $6,000. To promote the mining industry of the United States, foster the safety of miners, and give attention to the treatment of ores and the use of explosives.

National Park Service.—Director, Steven T. Mather, Ill. $4,500. Charged with the administration of the national parks and national monuments.

This Service was created by an Act of Aug. 25, 1916.

Department of Agriculture

Secretary of Agriculture.—David Franklin Houston, Mo.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, national forest reserves, and interstate game laws.

Assistant Secretary.—Carl Vrooman, Ill. $5,000.

Weather Bureau.—Chief, Charles F. Marvin, D. C. $5,000. Charged with forecasting of weather for the benefit of agriculture, commerce and navigation.

Bureau of Animal Industry.—Chief, A. D. Melvin, Ill. $5,000. Conducts inspection of animals and meat food products; investigates communicable diseases and their prevention, and the breeding and feeding of animals.

Bureau of Plant Industry.—Chief, William A. Taylor, Mich. $5,000. Charged with the improvement of crops by breeding and selection, and the introduction of new plants and seeds to different parts of the United States.

Forest Service.—Chief, Henry S. Graves, Conn. $5,000. Charged with the administration of the national forests, the investigation of forest problems and encouragement of protecting growing timber.

Bureau of Chemistry.—Chief, Carl L. Alsberg, Mass. $5,000. Charged with the analysis of agricultural products and fertilizers, and the investigation of the composition and adulteration of foods and drugs.

Bureau of Soils.—Chief; Milton Whitney, Md. $4,000. Charged with investigating soils in their relations to climate and organic life.

Bureau of Entomology.—Chief, L. O. Howard, N. Y. $4,500. Charged with dissemination of information regarding injurious insects affecting forests, crops and fruits, and means of their elimination.

Bureau of Biological Survey.—Chief, E. W. Nelson, Ariz. $3,500. Investigates the economic relations of animal life. Charged with enforcing the bird and game laws.

Bureau of Crop Estimates.—Chief, Leon M. Estabrook, Tex. $4,000. Collects and collates agricultural statistics and issues crop reports and forecasts. This bureau was called the Bureau of Statistics until 1914.

States Relations Service.—Director, A. C. True, Conn. $4,500. Charged with the supervision and promotion of agricultural education and the maintenance of agricultural experiment stations.

Office of Public Roads and Rural Engineering.—Director, Logan W. Page, Mass. $4,500. Charged with investigating road making, road maintenance and road materials, the conduct of irrigation and drainage investigations, and the study of other rural engineering problems.

Office of Markets and Rural Organization.—Chief, Charles J. Brand, Ill. $4,500. Charged with the conduct of investigations of rural economics and coöperative organization.

Office of Farm Management.—Chief, William J. Spillman, Wash. $4,000. Charged with the study and improvement of farm practice.

Department of Commerce

Secretary of Commerce.—William Cox Redfield, N. Y.

Charged with promoting commerce,

mining, manufacturing, shipping, fisheries, and transportation.

Assistant Secretary.—Edwin F. Sweet, Mich. $5,000.

Bureau of Foreign and Domestic Commerce.—Chief, Burwell S. Cutler, N. Y. $6,000. Succeeding Edward Ewing Pratt, N. Y., who resigned July 17. Charged with the collection and publication of statistics of foreign and domestic commerce, the development of manufactures and markets therefore, by the publication of information, and the investigation of matters affecting the commercial interest of the United States.

Bureau of Lighthouses.—Commissioner, George R. Putnam, Ia. $5,000. Charged with the administrative duties relating to lighthouses and protective signals.

Steamboat Inspection Service.—Supervising Inspector-General, George Uhler, Penn. $4,000. Charged with the inspection of vessels, the licensing of officers, and the administration of laws relating to steam vessels and their officers.

The Census Office.—Director, Samuel L. Rogers, N. C. $7,000 during decennial census period, $6,000 regular salary. The duty of the Census Office is to take, compile and publish the decennial census of the United States; the quinquennial census of agriculture and manufactures; the deaths in registration areas; the statistics of cotton ginned, and of cotton consumed; the annual statistics of cities; and to make such other statistical investigations as Congress may order.

Coast and Geodetic Survey.—Superintendent, E. Lester Jones, Va. $6,000. Charged with survey of coasts under the jurisdiction of the United States, and publication of charts covering these coasts.

Bureau of Fisheries.—Commissioner, Hugh M. Smith, D. C. $6,000. Charged with the propagation of useful food fishes, investigation of deep sea fishing grounds, and care of the Alaska salmon fisheries and the Pribilof Islands seals.

Bureau of Navigation.—Commissioner, Eugene T. Chamberlain, N. Y. $4,000. Charged with superintendence of the commercial marine, issue of licenses, and collection of tonnage taxes.

Bureau of Standards.—Director, Samuel W. Stratton, Ill. $6,000. Charged with comparing and testing standards used in scientific investigations, commerce and educational institutions with standards adopted or recognized by the Government.

DEPARTMENT OF LABOR

Secretary of Labor.—William Bauchop Wilson, Pa.

Charged with the duty of fostering, promoting and developing the welfare of the wage earners of the United States.

Assistant Secretary.—Louis F. Post, Ill. $5,000.

Bureau of Immigration.—Commissioner-General, Anthony Caminetti, Cal. $5,000. Charged with administration of immigration laws.

Bureau of Naturalization.—Commissioner, Richard K. Campbell, Va. $5,000. Charged with administration of the naturalization laws.

Bureau of Labor Statistics.—Commissioner, Royal Meeker, N. J. $5,000. Charged with the duty of acquiring and diffusing information concerning labor in its relations to capital and means of promoting prosperity among the laboring classes.

Children's Bureau.—Chief, Julia C. Lathrop, Ill. $5,000. Charged with the investigation of all matters pertaining to the welfare of children and child life.

INDEPENDENT BUREAUS AND INSTITUTIONS

Interstate Commerce Commission.—Nine members, each receiving an annual salary of $10,000; appointed for a term of seven years. Expiration of term indicated. Harry C. Hall, Col., Chairman, 1921; Balthaser H. Meyer, Wis., 1917; James S. Harlan, Ill., 1918; Edgar E. Clark, Iowa, 1919; Charles C. McChord, Ky., 1922; Winthrop M. Daniels, N. J., 1923; Robert W. Wooley, Va., 1920; Clyde B. Aitchison, Ore., 1921; George W. Anderson, Mass., 1922. Secretary, George B. McGinty, Ga., salary, $5,000.

Mr. Hall succeeds Mr. Meyer as chairman. On Dec. 12, the President nominated Mr. Meyer for reappointment, for the term expiring Dec. 31, 1924. The original act of Feb. 4, 1887, provided for five members. Under act of June 29, 1906, the number of commissioners was increased to seven, and has since been enlarged to nine members by act of Aug. 9, 1917.

Federal Reserve Board.—Created by the Federal Reserve Act of Dec. 23, 1913, for the supervision of the Federal reserve system. Composed of five appointive members (full term, 10 years; salary, $10,000 per annum) and the Secretary of the Treasury and the Comptroller of the Currency *ex officio*. The appointive members of the board, with the dates on which their terms expire, are as follows: Wm. P. G. Harding, Ala., governor (1922); Paul M. Warburg, N. Y., vice-governor (1918); Frederic A. Delano, Ill. (1920); Adolph C. Miller, Cal. (1924); Charles S. Hamlin, Mass. (1926). Secretary, H. Parker Willis, salary, $5,000.

Federal Trade Commission.—Created by the Federal Trade Commission Act of Sept. 26, 1914. Endowed by that Act and by the Clayton Anti-trust Act of Oct. 15, 1914, with powers of investigation and publicity over corporations and certain *quasi* judicial functions in the enforcement of anti-trust laws. Composed of five appointive members (full term, seven years), at salaries of $10,000 per annum. The members of the Board are as follows: William J. Harris, Chairman, Joseph E. Davies, William B. Colver, John Franklin Fort, Victor Murdock. Secretary, Leonidas L. Bracken, salary, $5,000.

United States Shipping Board.—Created by the Shipping Act of Sept. 7, 1916 (see 1916 YEAR BOOK, XX, *The Merchant Marine*). Charged with the administration of the Government fleet of merchant vessels and with the regulation of marine carriers. Composed of five appointive members (full term, six years) at salaries of $7,500 per annum. On Jan. 2, 1917, President Wilson nominated the following as members of the Board for the terms indicated: William Denman, San Francisco (six years); Bernard N. Baker, Baltimore (five years); John A. Donald, New York (four years); John B. White, Kansas City (three years); Theodore Brent, New Orleans (two years). All but Mr. Donald were confirmed on Jan. 19, 1917, and Mr. Donald on Jan. 23, 1917. Owing to a controversy in the Shipping Board, Chairman Denman resigned on July 24, and was succeeded by Edward N. Hurley. The present Shipping Board is as follows: Edward N. Hurley, Chairman; Raymond B. Stevens, Vice-Chairman; John A. Donald, Bainbridge Colby, Charles R. Page, Commissioners.

United States Employees' Compensation Commission.—Created by the Employees' Compensation Act of Sept. 7, 1916, for the administration of the system of compensation for Federal employees established by the Act (see XVI, *Labor Legislation*). Composed of three appointive members (full term, six years) at salaries of $4,000 per annum. On Jan. 5, 1917, President Wilson nominated the following as members of the Commission for the terms indicated: Dr. Riley McMillan Little, Swarthmore, Pa. (six years); Mrs. Frances C. Axtell, Bellingham, Wash. (four years); John K. Keegan, Indianapolis (two years).

United States Board of Mediation and Conciliation.—Created by an Act of July 15, 1913, for the purpose of settling by mediation, conciliation and arbitration industrial disputes at the request of parties thereto. Composed of a commissioner (term, seven years; salary, $7,500), an assistant commissioner (salary, $5,000) and not more than two other members. The present members of the Board are: Wm. L. Chambers, commissioner; G. W. W. Hanger, assistant commissioner; Martin A. Knapp, chairman.

Civil Service Commission.—Commissioners, John A. McIlhenny, La., president, $4,500; Charles M. Galloway, S. C., $4,000; Hermon W. Craven, Wash., $4,000. Charged with the conduct of competitive examinations of applicants for the classified civil service.

Government Printing Office.—Public Printer, Cornelius Ford, N. J. $5,500. Charged with the printing, press work, and binding of all Government publications of every description.

The Library of Congress.—Librarian, Herbert Putnam, Mass. $6,500. Primarily a reference library, composed of numerous collections, presented and bought. It is the third largest collection in the world. Under the jurisdiction of Congress.

Commission of Fine Arts.—Established 1910, to pass upon sites and plans for future buildings, monuments, etc., in the District of Columbia. No compensation, but actual expenses allowed. Chairman, Charles Moore, Mich.; vice-chairman, Frederick Law Olmstead, Mass., landscape architect; Herbert Adams, N. Y.; J. Alden Weir, N. Y. painter; Charles A. Platt, N. Y., architect; John R. Pope, N. Y., architect; William M. Kendall, N. Y., architect. Secretary, Col. C. S. Ridley.

Messrs. Weir, Platt and Kendall were appointed in 1916, succeeding Cass Gilbert, Edwin H. Blashfield and Pierce Anderson.

Smithsonian Institution.— Secretary, Charles D. Walcott. $7,500. Established 1846, under the terms of James Smithson's will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publication and lectures. Managed by a Board of Regents. It cooperates with the Government and national scientific bodies.

Under the direction of the Smithsonian Institution are the National Museum, charged with preserving and utilizing objects of art and ethnological, geological and mineralogical collections belonging to the United States; and the Bureau of American Ethnology.

Pan-American Union. — Director-General, John Barrett, Ore. $7,500. Established for the purpose of developing closer relations of commerce and friendship between the twenty-one republics of the Western Hemisphere.

THE SIXTY-FOURTH CONGRESS

The Senate.—A complete list of the members of the Senate in the Sixty-fourth Congress at the end of 1915 was given in the YEAR BOOK for 1915 (p. 188). In the YEAR BOOK for 1916 the changes which occurred during 1916 were given (p. 175).

House of Representatives.—A complete list of the members of the House of Representatives in the Sixty-fourth Congress at the end of 1915 was given in the YEAR BOOK in 1915 (p. 190). In the YEAR BOOK for 1916 the changes which occurred during 1916 were given (p. 175).

First Session.—The first session of the Sixty-fourth Congress was reviewed in the YEAR BOOK for 1916 (p. 176).

Second Session.—The second session of the Sixty-fourth Congress opened on Dec. 4, 1916, and ended on March 4, 1917. The total number of bills and resolutions introduced during the session was 31,108 of which 8334 were Senate bills and 21,104 House bills. The principal bills of public interest enacted during the session were the following, the dates being those of the President's approval:

S. 40. To authorize agricultural entries on surplus coal lands in Indian reservations. Public, No. 358. Feb. 27.

S. 703. To provide for the promotion of vocational education; to provide for coöperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for coöperation with the States in the preparation of teaching of vocational subjects; and to appropriate money and regulate its expenditure. Public, No. 347. Feb. 23.

S. 778. To authorize an exchange of lands with owners of private buildings within the Glacier National Park. Public, No. 382. Mar. 3.

S. 1061. To allow additional entries under the enlarged homestead Act. Public, No. 337. Feb. 20.

S. 1068. Relating to desert land entries. Public, No. 359. Feb. 27.

S. 5014. To amend section 1, of the act of Aug. 9, 1912, providing for patents on reclamation entries, and for other purposes. Public, No. 322. Feb. 15.

S. 5450. To provide for an additional judge in the State of Texas. Public, No. 352. Feb. 26.

S. 5716. To establish the Mt. McKinley National Park in the territory of Alaska. Public, No. 353. Feb. 26.

S. 5899. To punish persons who make false representations to settlers and others pertaining to the public lands of the United States. Public, No. 348. Feb. 23.

S. 6850. Authorizing transfer of certain retired Army officers to the active list. Public, No. 349. Feb. 23.

S. 7644. To create a new division of the Northern judicial district of Texas, and to provide for terms of court at Wichita Falls, Texas, and for a clerk for said court, and for other purposes. Public, No. 354. Feb. 26.

S. 7710. To amend the Irrigation Act of Mar. 3, 1891, section 18, and to amend section 2, of the act of May 11, 1898. Public, No. 395. Mar. 4.

S. 7963. To prohibit the manufacture or sale of alcoholic liquors in the Territory of Alaska, and for other purposes. Public, No. 308. Feb. 14.

S. 8079. To amend the 1st and 7th paragraphs of section 414 of the revised Statutes of the United States, as amended by the act of April, 1906. Public, No. 351. Feb. 26.

S. 8317. To authorize the legislature of Alaska to establish and maintain schools and for other purposes. Public, No. 385. Mar. 3.

S. J. Res. 206. Joint Resolution extending until Jan. 8, 1918, the effective date of section 10, of the act entitled "An act to supplement existing laws against unlawful restraints and monopolies, and for other purposes," approved Oct. 15, 1914. Public, No. 55. Mar. 4.

H. R. 198. To provide for the care and treatment of persons afflicted with leprosy, and to prevent the spread of leprosy in the U. S. Public, No. 299. Feb. 3.

H. R. 407. To provide for stock raising homesteads and for other purposes. Public, No. 290. Dec. 29, 1916.

H. R. 655. To pension the survivors of certain Indian wars from Jan. 1, 1859, to Jan. 1891, inclusive, and for other purposes. Public, No. 400. Mar. 4.

H. R. 8229. To establish a national military park at the battlefield of Guilford Courthouse. Public, No. 375. Mar. 2.

H. R. 8492. To restore homestead rights in certain cases. Public, No. 340. Feb. 20.

H. R. 9533. To provide a civil government for Porto Rico, and for other purposes. Public, No. 368. Mar. 2.

H. R. 10384. To regulate the immigration of aliens to, and the residence of aliens in, the U. S. Public, No. 301. Feb. 5.

H. R. 12195. To amend section 17, of the U. S. bankruptcy law of July 1, 1898, and amendments thereto of Feb. 5, 1903. Public, No. 376. Mar. 2.

H. R. 12541. Authorizing insurance companies and fraternal beneficiary societies to file bills of interpleader. Public, No. 346. Feb. 22.

H. R. 13831. To amend section 4464 of the Revised Statutes of the United States, relating to number of passengers to be stated in certificates of inspection of passenger vessels, and section 4465 of the Revised Statutes of the United States, prescribing penalty for carrying excessive number of passengers on passenger vessels, and section 4466 of the Revised Statutes of the United States relating to special permits for excursions on passenger steamers. Public, No. 318. Feb. 14.

H. R. 14426. To amend section 6 of an act entitled "An Act to incorporate the American National Red Cross," approved, Jan. 5, 1905. Public, No. 362. Feb. 27.

H. R. 14471. To amend act entitled "An Act to codify, revise, and amend the laws relating to the judiciary." Public, No. 341. Feb. 20.

H. R. 15314. To punish persons who make threats against the President of the United States. Public, No. 319. Feb. 14.

H. R. 18453. Making appropriations for the current and contingent expenses of the Bureau of Indian Affairs, for fulfilling treaty stipulations with various Indian tribes, and for other purposes, for the fiscal year ending June 30, 1918. Public, No. 369. Mar. 2.

H. R. 19300. Making appropriations for the Diplomatic and Insular Service for the fiscal year ending June 30, 1918. Public, No. 379. Mar. 3.

H. R. 19359. Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1918. Public, No. 390. Mar. 4.

H. R. 19410. Making Appropriations

for the service of the Post Office Department for the fiscal year ending June 30, 1918, and for other purposes. Public, No. 380. Mar. 3.

H. R. 20082. To amend an act entitled "An Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department," approved Sept. 2, 1914. Public, No. 387. Mar. 3.

H. R. 20573. To provide increased revenue to defray the expenses of the increased appropriations for the Army and Navy and the extensions of fortifications, and for other purposes. Public, No. 377. Mar. 3.

H. R. 20632. Making appropriations for the naval service for the fiscal year ending June 30, 1918, and for other purposes. Public, No. 391. Mar. 4.

H. R. 20748. Making appropriations for the payment of invalid and other pensions of the United States for the fiscal year ending June 30, 1918, and for other purposes. Public, No. 388. Mar. 3.

H. R. 20755. To provide a temporary government for the West Indian Islands acquired by the United States from Denmark by the convention entered into between said companies on Aug. 4, 1916, and ratified by the Senate of the United States on Sept. 7, 1916, and for other purposes. Public, No. 389. Mar. 3.

THE SIXTY-FIFTH CONGRESS

First Session.—The Sixty-fifth Congress, called into special session by the President, opened on April 2, and ended on Oct. 6. The total number of bills and resolutions introduced during the session was 10,037, of which 2,984 were Senate bills and 6,511 House bills. The principal bills of public interest enacted during the session were the following, the dates being those of the President's approval:

S. J. Res. 1. Joint resolution declaring that a state of war exists between the Imperial German Government and the Government and the people of the United States, and making provision to prosecute the same. Public, No. 1. April 6.

S. J. Res. 33. Joint resolution to relieve the owners of mining claims who have been mustered into the military or naval service of the United States as officers or enlisted men from performing assessment work during the term of such service. Public, No. 10. July 17.

S. J. Res. 67. Joint resolution to fix the status and rights of officers of the Public Health Service when serving with the Coast Guard, the army or the navy. Public, No. 9. July 9.

S. J. Res. 70. Joint resolution relating to the service of certain retired officers of the army. Public, No. 6. June 15.

S. J. Res. 78. Joint resolution to suspend the requirements of annual assessment work on mining claims during the year 1917 and 1918. Public, No. 12. Oct. 5.

S. 995. To authorize the issue to States and Territories and the District of Columbia of rifles and other property for the equipment of organizations of home guards. Public, No. 22. June 14.

S. 2133. To amend an act entitled "An Act to authorize the establishment of a bureau of War Risk Insurance in the Treasury Department," approved Sept. 2, 1914, and for other purposes. Public. No. 20. June 12.

S. 2156. To authorize exploration of and disposition of potassium. Public, No. 49. Oct. 2.

S. 2203. For the establishment of Northgate, S. D., as a port of entry for immediate transportation without appraisement of dutiable merchandise. Public, No. 65. Oct. 6.

S. 2437. To provide for the acquisition of an air station site for the United States Navy. Public, No. 62. Oct. 6.

S. 2453. To authorize condemnation proceedings of lands for military purposes. Public, No. 26. July 2.

S. 2477. To authorize the construction of a building for the use of the Treasury Department. Public, No. 45. Sept. 27.

S. 2527. Authorizing the appointment of chaplains at large for the United States Army. Public, No. 79. Oct. 6.

S. 2531. To prevent the publication of inventions by the grant of patents that might be detrimental to the public safety or convey useful information to the enemy, to stimulate invention, and provide adequate protection to owners of patents, and for other purposes. Public, No. 80. Oct. 6.

S. 2705. To create the Aircraft Board, and provide for its maintenance. Public, No. 48. Oct. 1.

S. 2865. For the relief of homestead entrymen or settlers who enter the military or naval service of the United States in time of war. Public, No. 60. July 28.

S. 2883. Making further provision for the allotment of pay of officers, enlisted men, and civilian employees of the Army, and for other purposes. Public, No. 66. Oct. 6.

S. 2916. To amend sections 24 and 256 of the Judicial Code, relating to the jurisdiction of the district courts, so as to save to claimants the rights and remedies under the workmen's compensation law of any State. Public, No. 82. Oct. 6.

S. 2922. To amend the laws relating to the denominations of circulating notes by national banks, and to permit the issuance of notes of small denominations, and for other purposes. Public, No. 61. Oct. 5.

H. R. 13. Making appropriations for the support of the army for the fiscal year ending June 30, 1918, and for other purposes. Public, No. 11. May 12.

H. R. 14. Making appropriations for the support of the Military Academy for the fiscal year ending June 30, 1918, and for other purposes. Public, No. 18. May 29.

S. J. Res. 42. Joint resolution authorizing the President to take over for the United States the possession and title of any vessel within its jurisdiction, which at the time of coming therein was owned in whole or in part by any corporation, citizen, or subject of any nation with which the United States may be at war, or was under register of any such nation, and for other purposes. Public, No. 2. May 12.

H. R. 291. To punish acts of interference with the foreign relations, the neutrality, and the foreign commerce of the U. S., to punish espionage, and better to enforce the criminal laws of the United States, and for other purposes. Public, No. 24. June 15.

H. R. 328. To amend an Act entitled "An Act to Regulate Commerce," as amended, in respect of car service, and for other purposes. Public, No. 19. May 29.

H. R. 1771. To amend an act entitled "An Act making appropriations for the naval service for the fiscal year ending June 30, 1917, and for other purposes, relative to the Fleet Naval Reserve." Public, No. 4. April 25.

H. R. 2008. To provide for the extension of minority enlistments in the naval service. Public, No. 5. April 25.

H. R. 2338. To authorize the detail of additional officers to the Hydrographic Office. Public, No. 6. April 25.

H. R. 2339. To increase the number of midshipmen at the Naval Academy until Sept. 1, 1918. Public, No. 7. April 25.

H. R. 2340. To increase the age limit for persons appointed as officers in the Naval Reserve. Public, No. 8. April 25.

H. R. 2762. To authorize an issue of bonds meet expenditures for the national security and defense, and for the purpose of assisting in the prosecution of the war, to extend credit to foreign governments and for other purposes. Public, No. 3. April 24.

H. R. 2893. To amend section 10 of chapter two of the Criminal Code. Public, No. 10. May 7.

H. R. 3330. To temporarily increase the commissioned and warrant and enlisted strength of the Navy and Marine Corps, and for other purposes. Public, No. 17. May 22.

H. R. 3545. To authorize the President to increase temporarily the Military Establishment of the United States. Public, No. 12. May 18.

H. R. 3673. To amend the act approved Dec. 23, 1913, known as the Federal Reserve Act, as amended by the acts of Aug. 4, 1914, Aug. 15, 1914, Mar. 3, 1915, and Sept. 7, 1916. Public, No. 25. June 21.

H. R. 3932. To prohibit the manufacture, distribution, storage, use, and possession in time of war of explosives, providing regulations for the sale, manufacture, distribution, storage, use, and possession of the same, and for other purposes. Public, No. 68. Oct. 6.

H. R. 4280. To provide revenue to defray war expenses, and for other purposes. Public, No. 50. Oct. 3.

H. R. 4960. To define, regulate and permit trade with the enemy, and for other purposes. Public, No. 91. Oct. 6.

H. R. 5082. Providing for an amendment to section 2293 of the Revised Statutes, allowing homestead and other public land affidavits to be taken before the military commander of any person engaged in military or naval service of the United States. Public, No. 71. Oct. 6.

H. R. 5646. To amend section 1585 of the Revised Statutes of the United States. Public, No. 87. Oct. 6.

H. R. 5647. To provide for the reimbursement of officers, enlisted men, and others in the naval service of the United States for property lost or destroyed in such service. Public, No. 70. Oct. 6.

H. R. 5648. To establish certain new ratings in the United States Navy, and for other purposes. Public, No. 88. Oct. 6.

H. R. 5723. To amend an act entitled "An Act to authorize the establishment of a Bureau of War Risk Insurance in the Treasury Department," approved Sept. 2, 1914, and for other purposes. Public, No. 90. Oct. 6.

H. R. 5901. To authorize an additional issue of bonds to meet expenditures for the national security and defense, and for the purpose of assisting in the prosecution of the war, to extend additional credit to foreign governments, and for other purposes. Public, No. 43. Sept. 24.

H. R. 5918. To authorize the President to organize provisionally as field artillery or infantry, and to use as field artillery or infantry during the existing emergency such regiments of cavalry as he may designate. Public, No. 89. Oct. 6.

H. R. 6175. Giving the United States Shipping Board power to suspend present provisions of law and permit vessels of foreign registry and foreign built vessels admitted to American registry under the Act of Aug. 18, 1914, to engage in the coastwise trade during the present war, and for a period of 120 days thereafter, except the coastwise trade with Alaska. Public, No. 73. Oct. 6.

H. R. 6306. To provide for the payment of six months' gratuity to the widow, children, or other previously designated dependent relatives of retired officers or enlisted men on active duty. Public, No. 74. Oct. 6.

H. R. 6350. To authorize the issuance of Reserve Corps and National Army commissions in the lower grade of staff corps, and to remove the fixed age limits requiring the discharge of Reserve Corps officers. Public, No. 76. Oct. 6.

H. R. 6362. To promote the efficiency of the United States Navy. Public, No. 77. Oct. 6.

H. R. 6363. To provide for the service of officers of auxiliary naval forces on naval courts. Public, No. 78. Oct. 6.

Second Session.—The Second Session of the Sixty-fifth Congress opened on Dec. 3, and recessed from Dec. 18 to Jan. 3, 1918. The principal business of public interest during

IV. THE NATIONAL ADMINISTRATION

SUMMARY OF APPROPRIATIONS OF CONGRESS AND CONTRACT AUTHORIZATIONS FOR THE FISCAL YEAR 1918

Statement showing by acts the appropriations for the fiscal year 1918 made during the Sixty-fourth Congress, second session (including appropriations made by the Army, Military Academy, rivers and harbors, sundry civil, and general deficiency acts passed during the Sixty-fifth Congress, first session):

Agriculture	$25,929,113.00
Army	273,046,322.50
Diplomatic and Consular	5,082,746.66
District of Columbia	14,172,997.85
Fortification	51,396,593.00
Indian	11,589,736.67
Legislative, executive, and judicial	39,894,592.42
Military Academy	1,344,896.18
Naval	517,273,802.08
Pension	160,060,000.00
Post Office	331,851,170.00
River and harbor	27,826,150.00
Sundry civil	147,363,928.77
Total	$1,606,832,049.13
General deficiency	163,841,400.52
Urgent deficiency	4,578,250.00
Miscellaneous	41,093,670.08
Permanent annual and indefinite appropriations	145,864,830.32
Total	$1,962,210,200.05
Increased compensation of 5 and 10 per cent. to certain employees (estimated)	15,000,000.00
Total regular appropriations, Sixty-fourth Congress, second session	$1,977,210,200.05

Appropriations for the fiscal year 1918, made during the Sixty-fifth Congress, first session (exclusive of Army, Military Academy, river and harbor, sundry civil, and general deficiency acts):

Expenses incident to the Sixty-fifth Congress, first session	$68,020.00
Loans to the allies under act of Apr. 24, 1917	3,000,000,000.00
Expenses of preparation and issue of bonds and certificates of indebtedness under act of Apr. 24, 1917	7,063,945.46
Bureau of War-Risk Insurance, cost of insuring vessels and their cargoes, etc.	45,150,000.00
Urgent deficiency act for the Military and Naval Establishments	3,281,094,541.60
Increase of Signal Corps of the Army, including purchase, operation, etc., of airships	640,000,000.00
Expenses under act to encourage production, conserve the supply, and control distribution of food products and fuel	162,500,000.00
Expenses under the act to stimulate agriculture and facilitate the distribution of agricultural products	11,346,400.00
Additional loans to the allies under act of Sept. 24, 1917	4,000,000,000.00
Expenses of preparation and issue of bonds, certificates of indebtedness, and war-saving certificates	21,377,890.92
Expenses under the act to define, regulate, and punish trading with the enemy	450,000.00
Expenses under the act establishing a military and naval family allowance, compensation, and insurance fund for the benefit of soldiers and sailors and their families	176,250,000.00
Urgent deficiency act for the fiscal year 1918 and prior years on account of war expenses	5,356,666,016.93
Interest on bonds and certificates (estimated)	200,000,000.00
Total appropriations, Sixty-fifth Congress, first session	$16,901,966,814.91
Total appropriations for the fiscal year 1918	$18,879,177,014.96

Contract authorizations, by acts in addition to appropriations heretofore made, to be met by future appropriations by Congress, authorized during the fiscal year 1918:

Fortification	$5,250,000.00
Naval	86,145,532.00
Sundry civil	900,000.00
Urgent deficiency appropriation act of June 24, 1917	16,550,000.00
Urgent deficiency appropriation act of Oct. —, 1917	2,401,458,393.50
Act to authorize the construction of a building for the use of the Treasury Department	1,250,000.00
Total contract authorizations	$2,511,553,925.50
Total appropriations and contract authorizations, fiscal year 1918	$21,390,730,940.46

Recapitulation:

Total appropriations, Sixty-fourth Congress, second session	1,977,210,200.05
Total appropriations, Sixty-fifth Congress, first session	16,901,968,814.91
Total contract authorizations, fiscal year 1918	2,511,553,925.50
Total appropriations and contract authorizations, fiscal year 1918	$21,390,730,940.46
Total appropriations, fiscal year 1918, exclusive of $7,000,000,000 for loans to the allies	$11,879,177,014.96
Total appropriations and contract authorizations, exclusive of $7,000,000,000 for loans to the allies	14,390,730,940.46

December is reviewed elsewhere in the YEAR BOOK. (See I. *American History.*)

Appropriations.—A summary of the appropriations of Congress and contract authorizations for the fiscal year 1918 is given in the table on p. 152. The YEAR BOOK for 1916 contained (p. 178) the annual appropriations of congress, fiscal years 1913-17.

THE SIXTY-FIFTH CONGRESS

The Senate.—The following is a list of the members of the Senate in the Sixty-fifth Congress of the U. S.:

THE SENATE

Democrats in Roman, 51; Republicans in *Italic*, 43; whole number, 94; vacancies due to deaths of Senators Husting and Newlands, 2. The vacancy caused by the death of Senator Lane, dem., was filled by Chas. L. McNary, rep. Salary, $7,500 per year and mileage of 20 cents per mile each way. Those marked * reëlected in 1916. Terms expire in years indicated.

ALABAMA

1919. J. H. Bankhead
1921. Oscar W. Underwood

ARIZONA

1921. Marcus A. Smith
1923. Henry F. Ashurst *

ARKANSAS

1919. Jos. T. Robinson
1921. Wm. F. Kirby

CALIFORNIA

1921. James D. Phelan
1923. *Hiram W. Johnson*

COLORADO

1919. John F. Shafroth
1921. Chas. S. Thomas

CONNECTICUT

1921. *Frank B. Brandegee*
1923. *George P. McLean* *

DELAWARE

1919. Willard Saulsbury
1923. J. O. Wolcott

FLORIDA

1921. Duncan U. Fletcher
1923. Park Trammell

GEORGIA

1919. Thos. W. Hardwick
1921. Hoke Smith

IDAHO

1919. *Wm. E. Borah*
1921. *James H. Brady*

ILLINOIS

1919. J. Hamilton Lewis
1921. *Lawrence Y. Sherman*

INDIANA

1921. *James E. Watson*
1923. *Harry S. New*

IOWA

1919. *Wm. S. Kenyon*
1921. *A. B. Cummins* *

KANSAS

1919. Wm. H. Thompson
1921. *Charles Curtis*

KENTUCKY

1919. Ollie M. James
1921. J. C. W. Beckham

LOUISIANA

1919. Jos. E. Ransdell
1921. Robt. F. Broussard

MAINE

1919. *Bert M. Fernald*
1923. *Frederick Hale*

MARYLAND

1921. John W. Smith
1923. *J. I. France*

MASSACHUSETTS

1919. *John W. Weeks*
1923. *Henry Cabot Lodge**

MICHIGAN

1919. *Wm. Alden Smith*
1923. *Chas. E. Townsend* *

MINNESOTA

1919. *Knute Nelson*
1923. *Frank S. Kellogg*

MISSISSIPPI

1919. Jas. K. Vardaman
1923. John S. Williams *

MISSOURI

1921. William J. Stone
1923. James A. Reed *

MONTANA

1919. Thos. J. Walsh
1923. Henry L. Myers *

NEBRASKA

1919. *Geo. W. Norris*
1923. G. M. Hitchcock *

NEVADA

1921. Vacant. Death of Senator Newlands
1923. Key Pittman *

New Hampshire

1919. Henry F. Hollis
1921. *Jacob H. Gallinger*

New Jersey

1919. Wm. Hughes
1923. *J. S. Frelinghuysen*

New Mexico

1919. *Albert B. Fall*
1923. A. A. Jones

New York

1921. *Jas. W. Wadsworth*
1923. *Wm. M. Calder*

North Carolina

1919. F. M. Simmons
1921. Lee S. Overman

North Dakota

1921. *Asle J. Gronna*
1923. *P. J. McCumber* *

Ohio

1921. *Warren G. Harding*
1923. Atlee Pomerene *

Oklahoma

1919. Robert L. Owen
1921. Thomas P. Gore

Oregon

1919. *Chas. L. McNary*
1921. G. E. Chamberlain

Pennsylvania

1921. *Boies Penrose*
1923. *Philander C. Knox*

Rhode Island

1919. *LeBaron B. Colt*
1923. Peter G. Gerry

South Carolina

1919. B. R. Tillman
1921. Ellison D. Smith

South Dakota

1919. *Thomas Sterling*
1921. Ed. S. Johnson

Tennessee

1919. John K. Shields
1923. K. D. McKellar

Texas

1919. Morris Sheppard
1923. Chas. A. Culberson *

Utah

1921. *Reed Smoot*
1923. Wm. H. King

Vermont

1921. *W. P. Dillingham*
1923. *Carroll S. Page* *

Virginia

1919. Thomas S. Martin
1923. Claude A. Swanson*

Washington

1921. *Wesley L. Jones*
1923. *Miles Poindexter* *

West Virginia

1919. *Nathan Goff*
1923. *Howard Sutherland*

Wisconsin

1921. Vacant. Death of Senator Husting
1923. *R. M. La Follette* *

Wyoming

1919. *F. E. Warren*
1923. John B. Kendrick

House of Representatives.—The following is a list of members of the House of Representatives in the Sixty-fifth Congress elected on Nov. 7, 1916.

HOUSE OF REPRESENTATIVES

Democrats in Roman, 215; Republicans in *Italic*, 211; Progressives in SMALL CAPS, 2; Independent in CAPS, 2; Socialist in *ITALIC CAPS*, 1; Prohibitionist in Roman with †, 1; whole number 431. Those marked * served in the 64th Congress. Salary, $7,500 per annum and mileage of 20 cents per mile.

Alabama

1. O. L. Gray *
2. S. H. Dent *
3. H. B. Steagall *
4. F. L. Blackmon *
5. J. T. Heflin *
6. W. B. Oliver *
7. J. L. Burnett *
8. E. B. Almon *
9. George Huddleston *

AT LARGE—W. B. Bankhead

Arizona

AT LARGE—Carl Hayden *

Arkansas

1. T. H. Caraway *
2. W. A. Oldfield *
3. J. N. Tillman *
4. O. T. Wingo *
5. H. M. Jacoway *
6. S. M. Taylor *
7. W. S. Goodwin *

California

1. Clarence F. Lea
2. J. E. Raker *
3. *C. F. Curry* *
4. *Julius Kahn* *
5. *J. I. Nolan* *
6. *J. A. Elston* *
7. D. S. Church *
8. *E. A. Hayes* *
9. C. H. Randall *†
10. *Henry Z. Osborne*
11. William Kettner *

Colorado

1. B. C. Hilliard *
2. *Chas. B. Timberlake* *
3. Edward Keating *
4. Edward T. Taylor *

Connecticut

1. Augustine Lonergan
2. *R. P. Freeman* *
3. *J. Q. Tilson* *
4. *S. Merritt*
5. *J. P. Glyn* *

Delaware

AT LARGE—Albert F. Polk

Florida

1. Herbert J. Drane
2. Frank Clark *
3. Walter Kehoe
4. W. J. Sears *

Georgia

1. J. W. Overstreet
2. Frank Park *
3. C. R. Crisp *
4. W. C. Adamson *
5. W. S. Howard *
6. Jas. W. Wise *
7. Gordon Lee *
8. C. H. Brand
9. Thomas M. Bell *
10. Carl Vinson *
11. J. R. Walker *
12. W. W. Larsen

Idaho

AT LARGE—
Burton L. French
A. T. Smith *

Illinois

1. *M. B. Madden* *
2. *J. R. Mann* *
3. *W. W. Wilson* *
4. Vacant. Death of Charles Martin
5. A. J. Sabath *
6. James McAndrews *

8. Thomas Gallagher *
9. *F. A. Britten* *
10. *George E. Foss* *
11. *I. C. Copley* *
12. *C. E. Fuller* *
13. *J. C. McKenzie* *
14. *Wm. J. Graham*
15. *E. J. King* *
16. *Clifford Ireland*
17. *J. A. Sterling* *
18. *J. G. Cannon* *
19. *W. B. McKinley* *
20. H. T. Rainey *
21. *L. E. Wheeler* *
22. *W. A. Rodenberg* *
23. M. D. Foster *
24. *T. S. Williams* *
25. *E. E. Denison* *

AT LARGE—*Wm. E. Mason Medill McCormick*

Indiana

1. George K. Denton
2. *Oscar E. Bland*
3. W. E. Cox *
4. Lincoln Dixon *
5. *Everitt Sanders*
6. *R. M. Elliott*
7. *Merrill Moores* *
8. *Albert H. Vestal* *
9. *F. S. Purnell*
10. *W. R. Wood* *
11. *Milton Kraus*
12. *L. W. Fairfield*
13. H. A. Barnhart *

Iowa

1. *C. A. Kennedy* *
2. *H. E. Hull* *
3. *B. E. Sweet* *
4. *G. N. Haugen* *
5. *J. W. Good* *
6. *C. W. Ramseyer* *
7. *C. C. Dowell* *
8. *H. M. Towner* *
9. *W. R. Green* *
10. *F. P. Woods* *
11. *George C. Scott*

Kansas

1. *D. R. Anthony, Jr.* *
2. *Edward C. Little*
3. *P. P. Campbell* *
4. Dudley Doolittle *
5. G. T. Helvering *
6. J. R. Connelly *
7. Jouett Shouse *
8. W. A. Ayres *

Kentucky

1. A. W. Barkley *
2. D. H. Kincheloe *
3. R. Y. Thomas, Jr. *
4. Ben Johnson *
5. Swagar Sherley *
6. A. B. Rouse *
7. J. C. Cantrill *
8. Harvey Helm *
9. W. J. Fields *
10. *J. W. Langley* *
11. *Caleb Powers* *

Louisiana

1. Albert Estopinal *
2. H. G. Dupré *
3. W. P. MARTIN *
4. J. T. Watkins *
5. Riley Wilson *
6. J. Y. Sanders
7. L. Lazaro *
8. James B. Aswell *

Maine

1. *Louis Goodall*
2. *Wallace H. White, Jr.*
3. *John A. Peters* *
4. *Ira G. Hersey*

Maryland

1. J. D. Price *
2. J. F. C. Talbott *
3. C. P. Coady *
4. J. C. Linthicum *
5. *S. E. Mudd* *
6. *F. N. Zihlman*

Massachusetts

1. *A. T. Treadway* *
2. *F. H. Gillett* *
3. *C. D. Paige* *
4. *S. E. Winslow* *
5. *J. J. Rogers* *
6. *W. W. Lufkin*
7. M. F. Phelan *
8. *F. W. Dallinger* *

9. ALVAN T. FULLER
10. P. F. Tague *
11. _G. H. Tinkham_ *
12. J. A. Gallivan *
13. _W. H. Carter_ *
14. Richard Olney, 2d *
15. _W. S. Greene_ *
16. _Joseph Walsh_ *

Michigan

1. F. E. Doremus *
2. S. W. Beakes
3. _J. M. C. Smith_ *
4. _E. L. Hamilton_ *
5. _C. E. Mapes_ *
6. _P. H. Kelley_ *
7. _L. C. Cramton_ *
8. _J. W. Fordney_ *
9. _J. C. McLaughlin_ *
10. _G. A. Currie_
11. _F. D. Scott_ *
12. _W. F. James_ *
13. _C. A. Nichols_ *

Minnesota

1. _Sydney Anderson_ *
2. _F. F. Ellsworth_ *
3. _C. R. Davis_ *
4. C. C. Van Dyke *
5. _Ernest Lundeen_
6. _Harold Knutson_
7. _A. J. Volstead_ *
8. _C. B. Miller_ *
9. _Halvor Steenerson_ *
10. THOMAS D. SCHALL *

Mississippi

1. E. S. Candler *
2. H. D. Stephens *
3. B. G. Humphreys *
4. T. U. Sisson *
5. W. W. Venable *
6. B. P. Harrison *
7. P. E. Quin *
8. J. W. Collier *

Missouri

1. Milton A. Romjue
2. W. W. Rucker *
3. J. W. Alexander *
4. C. F. Booher *
5. W. P. Borland *
6. C. C. Dickinson *
7. C. W. Hamlin *
8. D. W. Shackleford *
9. Champ Clark *
10. _J. E. Meeker_ *
11. W. L. Igoe *
12. _L. C. Dyer_ *
13. W. L. Hensley *
14. J. J. Russell *
15. P. D. Decker *
16. T. L. Rubey *

Montana

AT LARGE—J. M. Evans * _Jeanette Rankin_

Nebraska

1. _C. F. Reavis_ *
2. C. O. Lobeck *
3. D. V. Stephens *
4. _C. H. Sloan_ *
5. A. C. Shallenberger *
6. _M. P. Kinkaid_ *

Nevada

AT LARGE—_E. E. Roberts_ *

New Hampshire

1. _S. E. Burroughs_
2. _E. H. Wason_ *

New Jersey

1. _W. J. Browning_ *
2. _Isaac Bacharach_ *
3. T. J. Scully *
4. _E. C. Hutchinson_ *
5. _J. H. Capstick_ *
6. _John R. Ramsey_
7. _D. H. Drukker_ *
8. _E. W. Gray_ *
9. _R. W. Parker_ *
10. _Fred R. Lehlbach_ *
11. J. J. Eagan *
12. J. A. Hamill *

New Mexico

AT LARGE—W. B. Walton

New York

1. _Fred C. Hicks_ *
2. C. P. Caldwell *
3. Jos. V. Flynn *
4. H. H. Dale *
5. J. P. Maher *
6. _F. W. Rowe_ *
7. J. J. Fitzgerald *
8. D. J. Griffin * [1]
9. _O. W. Swift_ *
10. _R. L. Haskell_ *
11. D. J. Riordan *
12. _MEYER LONDON_ *
13. C. D. Sullivan
14. _F. H. La Guardia_
15. T. F. Smith
16. Peter J. Dooling *
17. J. F. Carew *
18. _George B. Francis_
19. _W. M. Chandler_ *
20. _Isaac Siegel_ *
21. Murray Hulbert *
22. Henry Bruckner * [2]
23. Dan. C. Oliver
24. _B. L. Fairchild_
25. _J. W. Husted_ *
26. _Edmund Platt_ *
27. _C. B. Ward_ *
28. _R. B. Sanford_ *
29. _J. S. Parker_ *
30. George R. Lunn
31. _B. H. Snell_ *
32. _L. W. Mott_ *
33. _H. P. Snyder_ *
34. _G. W. Fairchild_ *
35. _W. W. Magee_ *
36. _N. J. Gould_ *
37. _H. H. Pratt_ *
38. _T. B. Dunn_ *
39. _A. D. Sanders_
40. _S. W. Dempsey_ *
41. C. B. Smith *
42. _Wm. F. Waldow_
43. _C. M. Hamilton_ *

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[1] Elected Sheriff of Kings County, N. Y.; Special election to fill vacancy after Dec. 31, 1917.

[2] Elected Borough President Bronx County, N. Y. City; Special election to fill vacancy after Dec. 31, 1917.

North Carolina

1. J. H. Small *
2. Claude Kitchin *
3. George E. Hood *
4. E. W. Pou *
5. C. M. Stedman *
6. H. L. Godwin *
7. L. D. Robinson
8. R. L. Doughton *
9. E. Y. Webb *
10. Zebulon Weaver

North Dakota

1. J. M. BAER
2. *G. M. Young* *
3. *P. D. Norton* *

Ohio

1. *Nicholas Longworth* *
2. *Victor Heintz*
3. Warren Gard *
4. B. F. Welty
5. John S. Snook
6. *C. C. Kearns* *
7. *S. D. Fess* *
8. J. A. Key *
9. I. R. Sherwood *
10. *R. M. Switzer* *
11. H. C. Claypool
12. C. L. Brumbaugh *
13. A. W. Overmyer *
14. E. R. Bathrick
15. George White
16. *R. C. McCulloch* *
17. W. A. Ashbrook *
18. *D. A. Hollingsworth* *
19. *J. G. Cooper* *
20. William Gordon *
21. Robert Crosser *
22. *H. I. Emerson* *

Oklahoma

1. *T. A. Chandler*
2. W. W. Hastings *
3. C. D. Carter *
4. T. D. McKeown
5. J. B. Thompson *
6. Scott Ferris *
7. J. V. McClintic *
8. *D. T. Morgan* *

Oregon

1. *W. C. Hawley* *
2. *N. J. Sinnott* *
3. *C. N. McArthur* *

Pennsylvania

1. *W. S. Vare* *
2. *G. S. Graham* *
3. *J. H. Moore* *
4. *G. W. Edmonds* *
5. *P. E. Costello* *
6. *G. P. Darrow* *
7. *T. S. Butler* *
8. *H. W. Watson* *
9. *W. W. Griest* *
10. *J. R. Farr* *
11. *G. W. Templeton*
12. *R. D. Heaton* *
13. A. G. Dewalt *
14. *L. T. McFadden* *
15. *E. R. Kiess* *
16. J. V. Lesher *
17. *B. K. Focht* *
18. *A. S. Kreider* *
19. *John M. Rose*
20. A. R. Brodbeck
21. *C. H. Rowland* *
22. *Edwin E. Robbins*
23. B. F. Sterling
24. *H. W. Temple* *
25. *Henry A. Clark*
26. H. J. Steele *
27. *Nathan L. Strong*
28. E. H. Beshlin
29. *S. G. Porter* *
30. M. Clyde Kelly
31. *J. M. Morin* *
32. Guy E. Campbell

AT LARGE—*T. S. Crago* * *M. M. Garland* *
Joseph McLaughlin John R. K. Scott *

Rhode Island

1. G. F. O'Shaunessy *
2. *W. R. Stiness* *
3. *Ambrose Kennedy* *

South Carolina

1. R. S. Whaley *
2. J. F. Byrnes *
3. F. H. Dominick
4. S. J. Nicholls *
5. W. F. Stevenson
6. J. W. Ragsdale *
7. A. F. Lever *

South Dakota

1. *C. H. Dillon* *
2. *R. C. Johnson* *
3. H. L. Gandy *

Tennessee

1. *S. R. Sells* *
2. *R. W. Austin* *
3. J. A. Moon *
4. Cordell Hull *
5. W. C. Houston *
6. J. W. Byrns *
7. L. P. Padgett *
8. T. W. Sims *
9. F. J. Garrett *
10. Hubert Fisher

Texas

1. Eugene Black *
2. Martin Dies *
3. James Young *
4. Sam Rayburn *
5. H. W. Sumners *
6. Rufus Hardy *
7. A. W. Gregg *
8. J. H. Eagle *
9. J. J. Mansfield
10. J. P. Buchanan *
11. Thomas Connally
12. James C. Wilson
13. Marvin Jones
14. J. L. Slayden *
15. J. N. Garner *
16. Thos. L. Blanton

AT LARGE—D. E. Garret
Jeff. McLemore *

Utah

1. Milton H. Welling
2. J. H. Mays *

Vermont

1. *F. L. Greene* *
2. *P. H. Dale* *

VIRGINIA

1. W. A. Jones *
2. E. E. Holland *
3. A. J. Montague *
4. W. A. Watson *
5. E. W. Saunders *
6. Carter Glass *
7. T. W. Harrison
8. C. C. Carlin *
9. *C. B. Slemp* *
10. H. D. Flood *

WASHINGTON

1. *John F. Miller*
2. *L. H. Hadley*
3. *A. Johnson* *
4. *W. L. La Follette* *
5. C. C. Dill *

WEST VIRGINIA

1. M. M. Neely *
2. *George M. Bowers* *
3. *Stuart F. Reed*
4. *H. C. Woodyard*
5. *Edward Cooper* *
6. Adam B. Littlepage *

WISCONSIN

1. *H. A. Cooper* *
2. *Edward Voight*
3. *J. M. Nelson* *
4. *W. J. Cary* *
5. *W. H. Stafford* *
6. *J. H. Davidson*
7. *J. J. Esch* *
8. *E. E. Browne* *
9. David G. Classon
10. *J. A. Frear* *
11. *I. L. Lenroot* *

WYOMING

AT LARGE—*F. W. Mondell*

The United States Supreme Court.—Supreme Court justices are appointed for life and receive salaries of $14,500 per year, except the Chief Justice, whose salary is $15,000. The justices of the Supreme Court are:

	Born	App.
Edward D. White, La., Chief Justice	1845	1894
Joseph McKenna, Cal.	1843	1898
Oliver W. Holmes, Mass.	1841	1902
William R. Day, Ohio	1849	1903
Willis Van Devanter, Wyo.	1859	1910
Mahlon Pitney, N. J.	1858	1912
James C. McReynolds, Tenn.	1862	1914
Louis D. Brandeis, Mass.	1856	1916
John H. Clarke, Ohio	1857	1916

Clerk, James D. Maher, D. C.	$6,000
Marshal, Frank Key Green	4,500
Reporter, Ernest Knaebel, Col.	4,500

United States Circuit Courts of Appeals.—The act of March 3, 1911 (*A. Y. B.*, 1912, p. 231), provides that there shall be in each judicial circuit a Circuit Court of Appeals, which shall consist of three judges, two of whom shall constitute a quorum; the Chief Justice and the associate justices of the Supreme Court assigned to each circuit, and the several district judges within each circuit, shall be competent to sit as judges of the circuit court of appeals within their respective circuits, in addition to the judges of the circuit courts abolished in 1912. There were 32 circuit judges on Dec. 31, 1917, with one vacancy in the First Circuit. The salary of circuit judges is $7,000.

United States District Courts.—The judicial districts into which the United States is divided were enumerated in the YEAR BOOK for 1913 (p. 175). On Dec. 31, 1917, there were 95 district judges in the United States, exclusive of the non-contiguous territories (salary $6,000). There are four U. S. district judges in Alaska, two in Hawaii, one in Porto Rico, and one in the Canal Zone.

Court of Claims.—Claims against the United States are adjudicated by a Court of Claims consisting of five judges appointed for life or during good behavior, the Chief Justice receiving a salary of $6,500 and the associated judges of $6,000. The Court is now constituted as follows:

Chief Justice.—Edward K. Campbell, appointed 1913.
Judges.—Fenton W. Booth, appointed 1897.
Samuel S. Barney, appointed 1906.
George E. Downey, appointed 1915.
James Hay, appointed 1916.

Court of Customs Appeals.—The Court of Customs Appeals, created by the tariff act of 1909, is constituted as follows:

Presiding Judge.—Robert M. Montgomery, Michigan.
Associate Judges.—James F. Smith, California; Orion M. Barber, Vermont; Marion De Vries, California; George E. Martin, Ohio.

THE DIPLOMATIC SERVICE

The diplomatic service is naturally, in view of the unsettled condition caused by the war, constantly changing; and, therefore, no table such as that published on page 159 can be correct for long. For example the British Ambassador Sir Cecil Arthur Spring-Rice was superseded shortly after the first of the year 1918 by the appointment of Lord Reading, who will now represent the British Empire in the United States.

Country	ACCREDITED BY UNITED STATES	Appointed	ACCREDITED TO UNITED STATES	Commissioned
	AMBASSADORS			
Argentina	Frederic Jesup Stimson	1914	Rómulo S. Naón	1912
Austria-Hungary[1]	——— ———		——— ———	
Brazil	Edwin V. Morgan	1912	Domicio da Gama	1911
Chile	Joseph H. Shea	1916	Señor Don Santiago Aldunate	1917
France	William G. Sharp	1914	J. J. Jusserand	1903
Germany[2]	——— ———		——— ———	
Great Britain	Walter H. Page	1913	Sir Cecil Arthur Spring-Rice	1913
Italy	Thomas N. Page	1913	Count V. Macchi di Celliere	1914
Japan	Roland S. Morris	1917	Aimaro Sato	1916
Mexico	Henry P. Fletcher	1915	Señor Ing. Ygnacio Bonillas	1917
Russia	David R. Francis	1916	George Bakhméteff	1911
Spain	Joseph E. Willard	1913	Señor Don Juan Riaño y Gayangos	1910
Turkey	Abram I. Elkus	1916	A. Rustem Bey	1914
	MINISTERS PLENIPOTENTIARY			
Belgium	Brand Whitlock	1913	E. de Cartier de Marchienne	1917
Bolivia	John D. O'Rear	1913	Señor Don Ignacio Calderon	1904
Bulgaria	Chas. J. Vopecka	1917	Stephan Panaretoff	1915
China	Paul S. Reinsch	1913	V. K. Wellington Koo	1915
Colombia	Hoffman Philip	1917	Dr. Carlos Adolfo Urueta	1917
Costa Rica	Edward J. Hale	1913	Señor Don Manuel Castro Quesada	1915
Cuba	William E. Gonzales	1913	Dr. Carlos Manuel de Céspedes	1914
Denmark	Maurice Francis Egan	1907	Constantin Brun	1913
Dominican Republic	William W. Russell	1915	Dr. Louis Galvan	1917
Ecuador	Charles S. Hartman	1913	Señor Dr. Don Raphael H. Elizalde	1917
Greece and Montenegro	Garrett Droppers	1914	Georges Roussos	1917
Guatemala	William H. Leavell	1913	Señor Don Joaquin Mendes	1912
Haiti	Arthur Bailly-Blanchard	1914	Solon Ménos	1914
Honduras	John Ewing	1913	Dr. Alberto Membreño	1912
Netherlands and Luxemburg	John W. Garrett	1917	August Philips	1917
Nicaragua	Benjamin J. Jefferson	1913	Raymon Enuquez	1917
Norway	Albert J. Schmedemann	1913	H. H. Bryn	1910
Panama	William J. Price	1913	Señor Dr. Don Belisario Porras	1917
Paraguay	Daniel F. Mooney	1914	Héctor Valázquez	1913
Persia	John L. Caldwell	1914	Mehdi Khan	1914
Peru	Benton McMillan	1913	Manuel de Freyre y Santander	1916
Portugal	Thomas H. Birch	1913	Viscount de Alte	1902
Rumania, Serbia, and Bulgaria	Charles J. Volpicka	1913	——— ———	
Salvador	Boaz W. Long	1914	Señor Dr. Don Rafael Zaldivar	1915
Siam	George P. Ingersoll	1917	Phya Prabha Karavongse	1914
Sweden	Ira Nelson Morris	1914	W. A. F. Ekengren	1911
Switzerland	Pleasant A. Stovall	1913	Dr. Hans Sulzer	1917
Uruguay	Robert E. Jeffery	1915	Dr. Carlos Maria de Pena	1911
Venezuela	Preston McGoodwin	1913	Señor Don Santos A. Dominici	1914

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[1] War declared Dec. 7, 1917. [2] Diplomatic relations severed, Feb. 3, 1917.

THE CONSULAR SERVICE

By Act of Congress of Feb. 5, 1915, it is provided that consuls general and consuls will hereafter be appointed with the advice and consent of the Senate to grades and classes of the Service and not to particular posts. They will receive commissions as officers of specific classes and may be assigned by the President to posts of duty as the interest of the Service may require, and may be transferred by the President from one post to another as he may deem it necessary.

Consuls general and consuls are graded, classified and compensated as follows:

Consuls General	
Class one,	$12,000
Class two,	8,000
Class three,	6,000
Class four,	5,500
Class five,	4,500

Consuls	
Class one,	$8,000
Class two,	6,000
Class three,	5,000
Class four,	4,500
Class five,	4,000
Class six,	3,500
Class seven,	3,000
Class eight,	2,500
Class nine,	2,000

CIVIL SERVICE

Clinton Rogers Woodruff

The war has caused a large increase in the civil service, particularly of experts and professional men and of skilled tradesmen in the military establishments and navy yards. This increase has been made under the competitive system, and the restraints of that system upon patronage have not been weakened. Non-assembled examinations have been used for the higher positions and tradesmen in which a rating is made after investigation of the experience, training, education and fitness of the applicant. Where there has been reasonable probability that the government would require all the qualified persons of any particular kind who could be found, the qualifications have been rated as fast as applications were received and appointments made immediately.

A considerable number of volunteer workers have been employed at nominal salaries, both with and without examination, and a larger proportion of women than heretofore have obtained appointment, and the coöperation and resources of the National Civil Service Reform League and its affiliated bodies have been called upon.

Federal Civil Service.—The United States Civil Service Commission, faced by the unprecedented demands of the war, took the revolutionary step of borrowing lists of eligibles from state and municipal commissions, wherever the examination standards were considered high enough. By this means hundreds of places were filled with slight extra work and expense. This procedure gave impetus to the tendency to standardize requirements throughout the country, and it is expected that the practice will be followed after the war; so that the eligible list of all civil service commissions may eventually become practically interchangeable.

The Legislation by Congress, affecting the civil service, consisted chiefly in an increase of compensation to employees receiving not more than $1800 a year. President Wilson, by executive order on March 31, 1917, prescribed a civil service examination for all future vacancies in the offices of first, second and third-class post offices. Until then these offices had been regarded as political spoils, and the appointees were in nearly all cases designated by Senators, Representatives and political committees of the party in power. Under the law, appointments to all these offices, numbering about 10,000, are made every four years, so they have been the most important part of the "patronage" of every new administration. The Senate, however, retains the power to reject appointments to these offices. Technically, therefore, the executive order relates only to the original selection of the candidates by the President. It is believed, however, that there will be no open opposition to the candidate that may be named by the competitive method.

In making public the order, the Postmaster General announced that while the incumbents of the offices (appointed during the first Wilson administration under the political system) will not be disturbed so long as they perform their duties satisfactorily, they will be required to maintain a high standard of efficiency.

This executive order was the longest step in the direction of civil service reform taken by the Wilson administration. It was issued after Congress had refused to adopt Senator Poindexter's proposal to place the first, second and third class offices in the classified service, thus relieving the Senate of the power of confirmation. The fourth-class offices, over which the Senate has no control, have been subject to civil service rules for five years, and a part of them for a longer period.

In the acts creating the Farm Loan Board and the Federal Reserve Board it was provided that appointments were to be made without regard to the civil service law. Army field clerks were withdrawn from the civil service and placed in the military service by the Act of Aug. 29, 1916. Appointments to the Council of National Defense were excepted from the civil service rules by Executive order, but it is provided that, insofar as practicable, they should be made under the rules.

State Civil Service.—There was a marked tendency in legislative bodies, in states where civil service laws existed, to take advantage of the preoccupation of the public mind and create political offices. The Illinois legislature passed various bills tending to weaken the efficiency of the civil service in that state. In California the veto of Governor Stephens saved the state from a long list of pernicious anti-civil service bills. In New Jersey changes were made in the law granting an employee a hearing before dismissal.

In New York the perennial proposal to give a preference to veterans of the Spanish war was revived. Although this measure had been defeated annually for a number of years because of the public opposition to it, it was passed this year, together with a mass of other legislation inimical to the merit principle. As a constitutional amendment, however, it must be repassed by the legislature in 1919, and then submitted to referendum before it becomes law.

The administration of the civil service in New Jersey has been facilitated by various amendments to the law. Principal among these is the one abolishing the four-member commission, which was constantly deadlocked, and substituting a commission of five. The legislature provided also for a thorough system of efficiency ratings, and, under the direction of Dr. John D. Prince of Columbia University, the new president of the commission, the work of standardization of salaries and duties has been begun. Dr. Prince has also advocated training for the civil service as a career, a movement that has gained considerable headway in Wisconsin, where a law has been enacted which establishes a course of training for public service in the state university.

In Pennsylvania the legislature passed two bills, both applying to cities of the third class (of which there are 29), one providing for the application of the merit system to the police and fire departments; the other extending the civil service to all employees of the electrical, engineering and building inspection departments of these cities.

Municipal Civil Service.—In states and cities which have adopted the merit system, advance has been made in the development of efficiency systems for promotion, standardization of salaries, the extension of the merit system to higher positions not of a political character, the institution of special courses for the training of employees, and the adoption of the non-assembled type of examination.

In Los Angeles a provision was made in the county classification for a limited number of apprentice positions so as to have people ready for jobs when vacancies occur.

At the request of the Grand Rapids commission, a model civil service code was prepared for that city by the National Civil Service Reform League.

Federal Employees.—The National Federation of Federal Employees is of comparatively recent growth in the departmental service at Washington, although similar unions have existed in the Chicago post office and in the various navy yards throughout the country. The employees naturally seek increases in pay.

The retirement of superannuated government employees is one of the subjects to which the Federation has given especial attention. At a meeting held in Washington, D. C., on April 13, Congress was urged to take immediate action for passing a retirement law which contains the principal features of the Wadsworth-Dale Bill (S. 281) in order that justice may be done many faithful employees who have become incapacitated in the line of duty.

The Wadsworth-Dale Bill (S. 281, Sixty-fifth Congress) provides for the retirement of superannuated and disabled Government employees in the classified service, and may be extended, by executive order, to unclassified positions, to provide, ultimately, for compulsory retirement at the age of 70 years, and for optional retirement at the age of 65 years. Certain occupations are given a preferential age. It has a provision for retirement on account of disability after 15 years of service and before reaching the retirement age. The amount of annuity is limited to a maximum of $600 *per annum* and is graduated both in relation to number of years in the service and average salary during the last ten years of service. It also provides for deduction of two per cent. per annum from the salary of each employee, limited, however, to $50 *per annum*, which becomes a contribution to the "civil service retirement and disability fund," the government to make up the difference if any. Return of deductions will be made in all cases of separation from the service before reaching the retirement age.

The president of the Federation is H. M. McLarin and the secretary, E. J. Newmyer. The offices are in the American Federation of Labor Building, Washington, D. C.

Organizations.—The National Assembly of Civil Service Commissions held its tenth annual session at Boston, June 13-15. It is manifestly its duty to lay plans and furnish direction at once. This principle stated, the details of its program are thus summarized by the National Civil Service Reform League:

1. Coördination of the work of state and municipal commissions with the work of the federal commission.
2. A system of recruiting to replace the system of selection.
3. Efficiency. The control of the commission should not cease when the appointment is made.

Indivisibly allied with this question is the retirement problem. There must be immediate provision for the retirement on pensions or annuities of all civil employees who because of age or other disability have passed the period of effective usefulness.

The National Civil Service Reform League held a series of important meetings of its council during the year, notably one at Atlantic City, N. J., on June 1-2. On April 11, less than one week after the declaration of war by Congress, the Commercial Economy Board of the Council of National Defense requested the coöperation of the National Civil Service Reform League in solving the government's personnel problem. The Secretary of the League at once proceeded to Washington, and was followed by President Richard H. Dana, of Boston, and Chairman of the Council William B. Hale, of Chicago. With the assistance of the three Washington members of the Council and the expert staff of the League, a thorough study of the problem was made and recommendations drawn up. These recommendations were laid before the Council of the League at the special meeting on June 1, and were unanimously adopted in a formal report to the Council of National Defense.

Examinations and Appointments.—During the year 1916-17 there was an increase of 37 per cent. in the number of persons examined for entrance to the classified service and an increase of 78 per cent. in the number appointed. The entrance of the United States into the European war did not find the Commission wholly unprepared. It had nearly 100,000 eligibles on its various registers, and from these a large part of the increased number of appointments were made. The Commission began at once holding additional examinations to replenish registers and to establish registers of eligibles with qualifications needed for war work.

Extent of the Executive Civil Service.—On June 30, there were 517,805 officers and employees in the executive civil service. Of these 326,899 held positions subject to competitive examination under the civil service rules, an increase of 29,973. Of the 190,906 persons whose positions are not subject to competitive examination under the civil service rules, 12,134 are presidential appointees, 10,334 being postmasters of the first, second, and third classes; 5,600 are clerks in charge of contract stations; 71,000 are clerks in third and fourth class post offices; 8,150 are mail messengers; 12,035 are star-route, steamboat, and screen-wagon contractors; 4,502 are pension-examining surgeons; 19,938 are engaged in the Panama Canal Work, chiefly as laborers and minor employees; and 33,094 are unclassified laborers not elsewhere herein enumerated, of whom 6,500 are subject to tests of physical fitness under labor regulations. The remaining 24,453 are excepted from examination under Schedule A, or are subject to non-competitive examination.

V. STATE AND COUNTY GOVERNMENT

STATE AND COUNTY TABLES

JOHN M. MATHEWS

In the following series of tables the more important facts relative to the forty-eight states which at present constitute the American Union are brought together for convenient reference.

I. THE STATES OF THE UNION: AREA, POPULATION, AND DATES AND ORDER OF RATIFICATION OR ADMISSION.

State	Ratification of Constitution		Area, sq. m.	Population, June 1, 1900	Population, April 15, 1910	Percentage of Increase, 1900–1910	Rank in Population, 1910
New Hampshire	June	21, 1788	9,341	411,588	430,572	4.6	39
Massachusetts	Feb.	6, 1788	8,266	2,805,346	3,366,410	20.0	6
Rhode Island	May	29, 1790	1,248	428,556	542,610	26.6	38
Connecticut	Jan.	9, 1788	4,965	908,420	1,114,756	22.7	31
New York	July	26, 1788	49,204	7,268,894	9,113,614	25.4	1
New Jersey	Dec.	18, 1788	8,224	1,883,669	2,537,167	34.7	11
Pennsylvania	Dec.	12, 1787	45,126	6,302,115	7,665,111	21.6	2
Delaware	Dec.	7, 1787	2,370	184,735	202,322	9.5	46
Maryland	April	28, 1788	12,327	1,188,044	1,294,450	9.0	27
Virginia	June	26, 1788	42,627	1,854,184	2,061,612	11.2	20
North Carolina	Nov.	21, 1789	52,426	1,893,810	2,206,287	16.5	16
South Carolina	May	23, 1788	30,989	1,340,316	1,515,400	13.1	26
Georgia	Jan.	2, 1788	59,265	2,216,331	2,609,121	17.7	10
	Date of Admission						
Vermont	Feb.	18, 1791	9,564	343,641	355,956	3.6	42
Kentucky	June	1, 1792	40,598	2,147,174	2,289,905	6.6	14
Tennessee	June	1, 1796	42,022	2,020,616	2,184,789	8.1	17
Maine	March	3, 1820	33,040	694,466	742,371	6.9	34
Texas	Dec.	29, 1845	265,896	3,048,710	3,896,543	27.8	5
West Virginia	June	20, 1863	24,170	958,800	1,221,119	27.4	28
Ohio	April	30, 1802	41,040	4,157,545	4,767,121	14.7	4
Louisiana	April	8, 1812	48,506	1,381,625	1,656,388	19.9	24
Indiana	Dec.	11, 1816	36,354	2,516,462	2,700,876	7.3	9
Mississippi	Dec.	10, 1817	46,865	1,551,270	1,797,114	15.8	21
Illinois	Dec.	3, 1818	56,665	4,821,550	5,638,591	16.9	3
Alabama	Dec.	14, 1819	51,998	1,828,697	2,138,093	16.9	18
Missouri	March	2, 1821	69,420	3,106,665	3,293,335	6.0	7
Arkansas	June	15, 1836	53,335	1,311,564	1,574,449	66.2	25
Michigan	Jan.	26, 1836	57,980	2,420,982	2,810,173	16.1	8
Florida	March	3, 1845	58,666	528,542	752,619	42.1	33
Iowa	Dec.	28, 1846	56,147	2,231,853	2,224,771	-0.3	15
Wisconsin	May	29, 1848	56,066	2,069,042	2,333,860	12.7	13
California	Sept.	9, 1850	158,297	1,485,053	2,377,549	60.1	12
Minnesota	May	11, 1858	84,682	1,751,394	2,075,708	18.5	19
Oregon	Feb.	14, 1859	96,699	413,536	672,765	62.7	35
Kansas	Jan.	29, 1861	82,158	1,470,495	1,690,949	15.0	22
Nevada	March	21, 1864	110,690	42,335	81,875	93.4	48
Nebraska	Feb.	9, 1867	77,520	1,066,300	1,192,214	11.8	29
Colorado	March	3, 1875	103,948	539,700	799,024	48.0	32
North Dakota	Feb.	22, 1889	70,837	319,146	577,056	80.8	37
South Dakota	Feb.	22, 1889	77,615	401,570	583,888	45.4	36
Montana	Feb.	22, 1889	146,997	243,329	376,053	54.5	40
Washington	Feb.	22, 1889	69,127	518,103	1,141,990	120.4	30
Idaho	July	3, 1890	83,888	161,772	325,594	101.3	44
Wyoming	July	10, 1890	97,914	92,531	145,965	57.7	47
Utah	July	16, 1894	84,990	276,749	373,351	34.9	41
Oklahoma	Nov.	16, 1907	70,057	790,391	1,657,155	109.7	23
New Mexico	Jan.	6, 1912	122,634	195,310	327,301	67.6	43
Arizona	Feb.	14, 1912	113,956	122,931	204,354	66.2	45
Total[1]			[2] 3,026,789	75,994,575	91,972,266	21.	

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[1] Including Alaska (64,356), Hawaii (191,909), Porto Rico (1,118,012), and military persone abroad (55,608), the population in 1910 was 93,402,151. Adding estimates for the Philippine Islands (8,265,348), Guam, Tutuila and the Canal Zone, the total population of the United States and its possessions on April 15, 1910, was 101,748,269.

On July 1, 1917, the population of the continental United States, as estimated by the Bureau of the Census, was 103,635,306.

[2] 2,973,890 sq. miles land, 52,899 sq. miles water.

II. STATE TAXATION, INDEBTEDNESS, REVENUES AND EXPENDITURES

(In thousands of Dollars)

The figures in this table are taken from the report of the Bureau of the Census on "Financial Statistics of States," published for the first time in 1916. They relate to the fiscal year ending June 30, 1916, or to the first fiscal period prior thereto.

State	Assessed Valuation of Property	Total Tax Levy	Bonded Debt	Net Debt[1]	Receipts		Expenditures	
					Revenue	Non-Revenue	Governmental Cost	Non-Governmental Cost
Alabama	$630,204	$4,346	$9,057	$13,563	$7,014	$4,214	$8,068	$2,960
Arizona	422,102	2,304	3,009	844	2,903	812	2,604	871
Arkansas	447,020	3,577	1,250	1,238	3,848	1,008	4,047	871
California	[2] 346,089	[3] 7,298	33,013	33,375	26,496	26,947	32,224	18,606
Colorado	1,249,199	3,078	3,779	3,753	4,008	6,196	3,867	6,249
Connecticut	1,882,039	5,143	13,064	13,064	7,787	5,553	8,804	3,452
Delaware	[4]	[5] 140	811	796	889	550	879	483
Florida	292,563	1,789	601	601	3,229	614	3,563	529
Georgia	951,763	5,109	6,240	6,322	6,612	6,706	6,329	6,858
Idaho	396,627	878	2,237	1,711	2,233	1,556	2,278	1,637
Illinois	2,499,311	15,867	252	2,066	18,425	6,016	22,935	2,038
Indiana	2,053,819	8,940	923	767	12,475	2,858	11,168	3,658
Iowa	1,220,681	4,738	....	....	10,086	3,458	10,210	3,412
Kansas	2,884,624	3,853	....	....	6,268	5,159	6,123	4,947
Kentucky	1,184,220	6,732	86	2,607	9,287	4,760	10,055	3,772
Louisiana	587,008	3,798	11,451	13,479	6,788	3,934	6,469	3,942
Maine	595,447	3,502	1,403	2,637	7,725	1,290	7,747	918
Maryland	1,279,935	3,834	22,785	16,575	7,806	7,218	11,141	4,377
Massachusetts	8,214,795	17,909	124,675	86,042	27,533	27,433	25,722	26,016
Michigan	3,053,040	15,611	....	6,914	22,767	14,107	19,712	14,127
Minnesota	1,673,625	8,272	1,515	1,515	20,441	5,928	19,409	7,436
Mississippi	420,715	2,609	2,756	5,126	4,303	1,709	4,834	1,580
Missouri	1,857,519	3,735	2,634	7,032	9,571	2,232	10,247	2,447
Montana	439,785	1,425	1,230	1,186	7,841	5,983	3,666	10,409
Nebraska	482,269	3,397	....	....	5,865	2,411	5,065	2,752
Nevada	151,138	883	300	680	1,403	520	1,313	500
New Hampshire	440,467	1,440	986	1,951	2,327	1,456	2,413	1,564
New Jersey	10,161,479	16,619	....	116	20,370	3,933	18,550	3,881
New Mexico	90,634	1,107	3,105	2,561	1,848	3,516	1,877	2,724
New York	12,070,420	39,846	186,400	148,740	46,111	68,590	81,461	40,402
N. Carolina	888,310	2,599	8,753	8,883	4,360	3,335	4,826	3,032
N. Dakota	384,938	1,681	613	511	4,472	6,007	4,079	5,478
Ohio	7,372,353	6,270	1	5,341	19,127	4,582	19,631	5,583
Oklahoma	1,187,164	4,216	6,447	6,446	6,547	18,932	6,461	17,794
Oregon	932,413	3,372	....	....	4,655	2,030	4,386	2,022
Pennsylvania	[4]	[6] 20,341	1,072	472	34,284	4,239	36,049	5,034
Rhode Island	845,430	1,798	7,299	6,390	3,277	1,007	3,702	645
S. Carolina	490,177	2,270	5,616	5,386	2,978	2,252	3,117	2,000
S. Dakota	1,271,604	1,325	....	....	3,537	2,865	3,392	2,748
Tennessee	680,487	2,726	12,935	15,863	4,839	13,824	5,788	13,016
Texas	2,755,171	16,689	4,547	4,547	17,255	5,490	18,848	4,994
Utah	229,265	2,129	3,060	2,691	2,578	3,953	4,138	2,967
Vermont	396,685	1,878	135	611	3,122	2,407	3,137	2,319
Virginia	1,039,503	3,212	23,408	23,772	9,314	5,001	8,536	5,316
Washington	1,031,277	7,355	296	1,209	11,648	3,582	10,837	3,365
W. Virginia	1,286,755	3,148	....	....	4,529	6,710	4,163	6,366
onsin	3,856,805	10,365	....	2,151	14,917	3,113	14,808	3,441
ing	210,485	841	108	108	1,221	810	1,434	588

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bt is funded and floating debt less sinking fund assets.

only the valuation of property subject to special property taxes; general property for state purposes.

$3,145, collections of special property taxes for which no assessed valuation is re-

roperty not assessed for state purposes.

ns of special property taxes for which no assessed valuation is reported.

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III. STATE CONSTITUTIONS

For the revision of the table of state constitutions on pp. 184–9 of the American Year Book for 1910, it is necessary only to note that the following states have adopted popular initiative as a second means of proposing amendments: California (1911), Colorado (1910), Michigan (1913), Nebraska (1912), North Dakota (1914), and Ohio (1912). The data for Arizona and New Mexico, admitted as states in 1912, are as follows:

State	Date	Method of Adoption		Present Method of Amendment			Present Method of General Revision	
		Framed by	Popular Ratification	Proposed by	Limitations	Popular Ratification	Convention Called by	Popular Ratification
New Mexico	1911	Convention	Yes	⅔ members of each house	Not more than three at one time	Majority equal to 40 per cent. of total vote in one-half counties	¾ of each house and popular vote	Majority of votes
Arizona	1911	Convention	Yes	(1) Majority of each house (2) Popular initiative		Majority vote on question	Popular vote	Majority vote

IV. STATE AND TERRITORIAL GOVERNORS

State or Territory	Governor	Capital	Length of Term	Term Expires	Salary
Maine	*C. E. Milliken*	Augusta	2	January, 1919	$5,000
New Hampshire	*H. W. Keyes*	Concord	2	January, 1919	3,000
Vermont	*H. F. Graham*	Montpelier	2	January, 1919	3,000
Massachusetts	*S. W. McCall*	Boston	1	January, 1919	10,000
Rhode Island	*R. L. Beeckman*	Providence	2	January, 1919	3,000
Connecticut	*M. H. Holcomb*	Hartford	2	January, 1919	5,000
New York	*C. S. Whitman*	Albany	2	January, 1919	10,000
New Jersey	*W. E. Edge*	Trenton	3	January, 1920	10,000
Pennsylvania	*M. G. Brumbaugh*	Harrisburg	4	January, 1919	10,000
Delaware	*J. G. Townsend*	Dover	4	January, 1921	4,000
Maryland	E. C. Harrington	Annapolis	4	January, 1920	4,500
Virginia	Westmoreland Davis	Richmond	4	February, 1922	5,000
West Virginia	J. J. Cornwell	Charleston	4	March, 1921	5,000
North Carolina	T. W. Bickett	Raleigh	4	January, 1921	6,500
South Carolina	R. I. Manning	Columbia	2	January, 1919	3,000

Democrats in Roman; Republicans in *Italics.*

IV. STATE AND TERRITORIAL GOVERNORS—*Continued*

State or Territory	Governor	Capital	Length of Term	Term Expires	Salary
Georgia	Hugh M. Dorsey	Atlanta	2	June, 1919	$5,000
Florida	Sidney J. Catts	Tallahassee	4	January, 1921	6,000
Kentucky	A. O. Stanley	Frankfort	4	December, 1919	6,500
Tennessee	T. C. Rye	Nashville	0	January, 1919	4,000
Alabama	Charles Henderson	Montgomery	4	January, 1919	7,500
Mississippi	T. G. Bilbo	Jackson	4	January, 1920	4,500
Arkansas	C. H. Brough	Little Rock	2	January, 1919	4,000
Louisiana	R. G. Pleasant	Baton Rouge	4	April, 1920	7,500
Texas	W. P. Hobby	Austin	2	January, 1919	4,000
Oklahoma	R. L. Williams	Oklahoma City	4	January, 1919	4,500
Ohio	J. M. Cox	Columbus	2	January, 1919	10,000
Indiana	*J. P. Goodrich*	Indianapolis	4	January, 1921	8,000
Illinois	*F. O. Lowden*	Springfield	4	January, 1921	12,000
Michigan	*A. E. Sleeper*	Lansing	2	January, 1919	5,000
Wisconsin	*E. L. Philipp*	Madison	2	January, 1919	5,000
Minnesota	*J. A. A. Burnquist*	St. Paul	2	January, 1919	7,000
Iowa	*W. L. Harding*	Des Moines	2	January, 1919	5,000
Missouri	F. D. Gardner	Jefferson City	4	January, 1921	5,000
Kansas	*Arthur Capper*	Topeka	2	January, 1919	5,000
Nebraska	K. Neville	Lincoln	2	January, 1919	2,500
South Dakota	*P. Norbeck*	Pierre	2	January, 1919	3,000
North Dakota	L. J. FRAZIER	Bismarck	2	January, 1919	5,000
Montana	S. V. Stewart	Helena	4	January, 1921	7,500
Idaho	Moses Alexander	Boise	2	January, 1919	5,000
Wyoming	F. L. Houx[1]	Cheyenne	4	January, 1919	4,000
Colorado	J. C. Gunter	Denver	2	January, 1919	5,000
New Mexico	*W. E. Lindsey*	Santa Fé	4	January, 1920	5,000
Arizona	*Thomas Campbell*	Phoenix	2	January, 1919	6,000
Utah	S. Bamberger	Salt Lake City	4	January, 1921	4,000
Nevada	Emmet Boyle	Carson City	4	January, 1919	4,000
California	*W. D. Stephens*	Sacramento	4	January, 1919	10,000
Oregon	*James Withycombe*	Salem	4	January, 1919	5,000
Washington	Ernest Lister	Olympia	4	January, 1921	6,000
Alaska	J. F. A. Strong	Juneau	4	April, 1921	7,000
Hawaii	L. E. Pinkham	Honolulu	4	November, 1921	7,000
Porto Rico	Arthur Yager	San Juan	Indef.[1]		10,000
Philippine Islands	F. B. Harrison	Manila	Indef.		18,000

Democrats in Roman; Republicans in *Italics*; Non-Partisan in SMALL CAPS. [1] Acting governor.

V. STATE AND TERRITORIAL LEGISLATURES

	Number of Members		Length of Term (years)		Regular Sessions	Regular Session Begins	Limit of Session (days)	Salary
	Senate	House	Senate	House				
Maine	31	151	2	2	Biennial	January, 1919	None	$400 per year.
New Hampshire	24	404	2	2	Biennial	January, 1919	None	200 per term.
Vermont	30	246	2	2	Biennial	January, 1919	None	4 per day.
Massachusetts	40	240	1	1	Annual	January, 1919	None	1,000 per year.
Rhode Island	39	100	2	2	Annual	January, 1919	60	5 per day.
Connecticut	35	258	2	2	Biennial	January, 1919	5 mo.	300 per year.
New York	51	150	2	1	Annual	January, 1919	None	$1,500 per year.
New Jersey	21	60	3	1	Annual	January, 1919	None	500 per year.
Pennsylvania	50	207	4	2	Biennial	January, 1919	None	1,500 per year.
Delaware[1]	17	35	4	2	Biennial	January, 1919	60	5 per day.
Maryland	27	102	4	2	Biennial	January, 1920	90	$5 per day.
Virginia	40	100	4	2	Biennial	January, 1920	60[2]	500 per session.
West Virginia[1]	30	86	4	2	Biennial	January, 1919	45	4 per day.
North Carolina	50	120	2	2	Biennial	January, 1919	60	4 per day.
South Carolina	44	124	4	2	Annual	January, 1919	40	200 per session.
Georgia	44	189	2	2	Annual	June, 1919	50	4 per day.
Florida	32	71	4	2	Biennial	April, 1919	60	6 per day.
Kentucky	38	100	4	2	Biennial	January, 1920	60	$10 per day.
Tennessee	33	99	2	2	Biennial	January, 1919	75	4 per day.
Alabama	35	106	4	4	Quadrennial	January, 1919	50	4 per day.
Mississippi	45	136	4	4	Biennial	January, 1920	45	500 per session.
Arkansas	35	100	2	2	Biennial	January, 1919	60	6 per day.
Louisiana	41	118	4	4	Biennial	April, 1920	60	5 per day.
Texas	31	143	4	2	Biennial	January, 1919	None	5 per day.[3]
Oklahoma	44	98	4	2	Biennial	January, 1919	60	6 per day.

Democratic legislatures in Roman; Republican in *Italic*. [1] Republican Senate; Democratic House. [2] Can be extended 30 days by $^3/_5$ vote. [3] For 60 days; 2 per day thereafter

V. STATE AND TERRITORIAL LEGISLATURES—*Continued*

STATE OR TERRITORY	NUMBER OF MEMBERS		LENGTH OF TERM (YEARS)		Regular Sessions	Regular Session Begins	Limit of Session (days)	Salary
	Senate	House	Senate	House				
Ohio	33	123	2	2	Biennial	January, 1919	None	$1,000 per year.
Indiana	50	100	4	2	Biennial	January, 1919	61	6 per day.
Illinois	51	153	4	2	Biennial	January, 1919	None	$3,500 per session.
Michigan	32	100	2	2	Biennial	January, 1919	None	800 regular session. 5 per day, extra session.
Wisconsin	33	100	4	2	Biennial	January, 1919	None	500 per session.
MINNESOTA	67	130	4	2	Biennial	January, 1919	90	1,000 per session.
Iowa	50	108	4	2	Biennial	January, 1919	90	1,000 regular session. 10 per day, extra session.
Missouri	34	142	4	2	Biennial	January, 1919	70	5 per day.
Kansas	40	125	4	2	Biennial	January, 1919	None	3 per day.
Nebraska	33	100	2	2	Biennial	January, 1919	60	600 per session.
South Dakota	45	104	2	2	Biennial	January, 1919	60	5 per day.
NORTH DAKOTA	49	113	4	2	Biennial	January, 1919	60	5 per day.
Montana	41	95	4	2	Biennial	January, 1919	60	$10 per day.
Idaho	33	61	2	2	Biennial	January, 1919	60	5 per day.
Wyoming	27	57	4	2	Biennial	January, 1919	40	8 per day.
Colorado	35	65	4	2	Biennial	January, 1919	90	1,000 per session.
New Mexico	24	49	4	2	Biennial	January, 1919	60	5 per day.
Arizona	19	35	2	2	Biennial	January, 1919	60	7 per day.
Utah	18	45	4	2	Biennial	January, 1919	60	4 per day.
Nevada[1]	22	53	4	2	Biennial	January, 1919	60	10 per day.
California	40	80	4	2	Biennial	January, 1919	[2]	1,000 regular session. 10 per day, extra session.
Oregon	30	60	4	2	Biennial	January, 1919	40	3 per day.
Washington	42	97	4	2	Biennial	January, 1919	60	5 per day.
Alaska	8	16	4	2	Biennial	March, 1919	60	$15 per day.
Hawaii	15	30	4	2	Biennial	February, 1919	60	600 per session.
Porto Rico	19	39	4	4	Annual	February, 1919	60	7 per day, members of House. 3,000 per year for 4 members of Senate, 5 serving without pay.
Philippine Islands	24	90	6	3	Annual	October, 1918	100	4,000 for senators 3,000 for representatives

Democratic legislatures in Roman; Republican in *Italic*; Non-Partisan in SMALL CAPS. [1] Republican Senate, Democratic House. [2] Split session; first part 30 days; recess 30 days; no limit to second part.

VI. STATE JUDICIARY

State	Highest State Court					Other Courts				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Maine	Supreme Court	7	7	Gov. and Council	$5,000	Nisi Prius	......	......	......	....
						Superior Courts in 2 counties	......	2	7	Gov. ard Council
New Hampshire	Supreme Court	5	1	Gov. and Council	5,000	Superior Court	10	5	(*a*)	Gov. and Council
Vermont	Supreme Court	5	2	Legislature	4,000	County Courts	14	6	2	Legislature
Massachusetts	Supreme Court	7	2	Gov. and Council	10,500 10,000	Superior Court	......	28	(*b*)	Gov. and Council
Rhode Island	Supreme Court	5	3	Legislature	6,000	Superior Court	......	7	(*c*)	Legislature
						District Courts	12	13	3	Legislature
Connecticut	Court of Errors	5	8	Gov. and Legislature	8,000 7,500	Superior Court	8	11	8	Gov. and Legis.
						Court of Common Pleas in 5 counties	5	8	4	Gov. and Legis.
New York	Court of Appeals	7	14	Elected	$14,200 13,700	Appellate Division	4	25	......	....
						Supreme Court	9	107	14	Elected
						County Courts	......	......	6	Elected
New Jersey	Court of Errors and Appeals	16	7	Gov. and Senate	13,000 12,000	Chancery	......	9	7	Gov. and Senate
						Supreme Court	9	9	7	Gov. and Senate
						Circuit Court	6	6	7	Gov. and Senate
						County Courts	......	......	......	Gov. and Senate
Pennsylvania	Supreme Court	7	21	Elected	13,500 13,000	Superior Court	5	7	10	Elected
						Court of Common Pleas	......	......	......	....
Delaware	Court of Errors and Appeals	6	12	Gov. and Senate	5,000	Chancellor	......	......	12	Gov. and Senate
Maryland	Court of Appeals	8	15	Elected by Districts	$6,800	Circuit Courts	8	22	15	Elected
						Special Courts, in Balt.	......	......	......	....
Virginia	Supreme Court of Appeals	5	12	Legislature	5,200 5,000	Circuit Courts	31	31	8	Legislature
West Virginia	Supreme Court of Appeals	5	12	Elected	5,500	Circuit Courts	23	24	8	Elected
North Carolina	Supreme Court	5	8	Elected	4,000	Superior Court	20	20	8	Elected
South Carolina	Supreme Court	5	8	Legislature	3,000	Circuit Courts	14	14	8	Legislature
Georgia	Supreme Court	6	6	Elected	4,000	Court of Appeals	3	6	6	Elected
						Superior Court	28	31	4	Elected
Florida	Supreme Court	5	6	Elected	4,500	Circuit Courts	13	14	4	Gov. and Senate
						County Courts	......	......	......	....

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[1] Until 70 years of age. [2] During good behavior. [3] Until removed by the legislature.

VI. STATE JUDICIARY—*Continued*

State	Highest State Court					Other Courts				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Kentucky	Court of Appeals	7	8	Elected by districts	$5,000	Circuit Courts	35	43	6	Elected
Tennessee	Supreme Court	5	8	Elected	5,000	Court of Civil Appeals	23	5	8	Elected
						Chancery Court	14	14	8	Elected
						Circuit Courts	18	18	8	Elected
						Criminal Court	8	8	8	Elected
Alabama	Supreme Court	7	6	Elected	5,000	Chancery Courts	5	5	6	Elected
						Circuit Courts	16	16	6	Elected
Mississippi	Supreme Court	3	9	Gov. and Senate	4,500	Chancery Courts	......	......	4	Gov. and Senate
						Circuit Courts	13	......	4	Gov. and Senate
Arkansas	Supreme Court	5	8	Elected	4,000	Circuit Courts	18	21	6	Elected
Louisiana	Supreme Court	5	12	Elected	6,000	Circuit Courts of Appeals	4	9	8	Elected
						District Courts	30	32	4	Elected
Texas	Supreme Court	3	6	Elected	5,000	Court of Criminal Appeal	......	3	6	Elected
						Courts of Civil Appeals	9	27	6	Elected
						District Courts	......	......	4	Elected
Oklahoma	Supreme Court	5	6	Elected	4,000	Criminal Court of Appeals	3	3	6	Elected
						District Courts	27	27	4	Elected
Ohio	Supreme Court	7	6	Elected	$6,500	Courts of Appeal	8	24	6	Elected
						Courts of Common Pleas	......	......	6	Elected
Indiana	Supreme Court	5	6	Elected	6,000	Appellate Courts	2	6	4	Elected
						Circuit Courts	68	68	6	Elected
						Superior Courts in 10 count's	......	14	4	Elected
Illinois	Supreme Court	7	[illegible]	Elected	10,000	Courts of Appeal	4	15	......	....
						Circuit Courts	18	65	6	Elected
						County Courts	102	102	4	Elected
Michigan	Supreme Court	8	8	Elected	7,000	Circuit Courts	39	49	6	Elected
Wisconsin	Supreme Court	7	10	Elected	7,500	Circuit Courts	20	25	6	Elected
Minnesota	Supreme Court	5	6	Elected	7,000	District Courts	19	46	6	Elected
Iowa	Supreme Court	7	6	Elected	6,000	District Courts	21	59	4	Elected
Missouri	Supreme Court	7	10	Elected	7,500	Courts of Appeal	3	9	12	Elected
						Circuit Courts	38	65	6	Elected
Kansas	Supreme Court	7	6	Elected	4,000	District Courts	34	38	4	Elected
Nebraska	Supreme Court	7	6	Elected	4,500	District Courts	18	32	4	Elected
South Dakota	Supreme Court	5	6	Elected	3,600	Circuit Courts	12	13	4	Elected
North Dakota	Supreme Court	5	6	Elected	5,500	District Courts	12	12	4	Elected

VI. STATE JUDICIARY—*Continued*

STATE	HIGHEST STATE COURT					OTHER COURTS				
	Name of Court	No. of Judges	Length of Term (years)	How Chosen	Salary	Name	No. of Dists.	No. of Judges	Term (years)	How Chosen
Montana	Supreme Court	3	6	Elected	$6,000	District Courts	18	27	4	Elected
Idaho	Supreme Court	3	6	Elected	5,000	District Courts	9	12	4	Elected
Wyoming	Supreme Court	3	8	Elected	5,000	District Courts	7	7	6	Elected
Colorado	Supreme Court	7	10	Elected	5,000	District Courts County Courts	13	22	6	Elected ....
New Mexico	Supreme Court	3	8	Elected	6,000	District Courts	8	8	6	Elected
Arizona	Supreme Court	3	6	Elected	5,000	Superior Courts	14	14	4	Elected
Utah	Supreme Court	3	6	Elected	5,000	District Courts	7	12	4	Elected
Nevada	Supreme Court	3	6	Elected	6,000	District Courts	10	10	4	Elected
California	Supreme Court	7	12	Elected	8,000	Courts of Appeal Superior Courts	3 58	9 103	12 4	Elected Elected
Oregon	Supreme Court	7	6	Elected	4,500	Circuit Courts	20	25	6	Elected
Washington	Supreme Court	9	6	Elected	6.000	Superior Courts	39	59	4	Elected

VII. COUNTY OFFICERS

STATE	No. of Counties	County Bd., No. of Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
Maine	16	3		El.	El.	El.	App.	El.	El.	.....	El.			El.				
New Hampshire	10	3		App.	El.	El.	App.	App.	El.	.....	El.	App.	El.	El.		El.	App.	App.
Vermont	14		El.	dist.	El.	El.		El.	App.	.....		App.		App.				
Massachusetts	14	3		App.	Dist.	El.	.....	El.	El.	.....	El.			El.				
Rhode Island	5	None				App.		App.										
Connecticut	8	App. 3	s.	dist.	App.	El.	App.	App.				App.		App.				App.
New York	62	Var.	El.	El.	El.	El.	El.	.....		El.	s.	s.		El.		dist.	App.	App.
New Jersey	21	Var.	App.	App.	App.	El.	El.	.....		El.	s.	App.		App.	App.	App.	s.	
Pennsylvania	67	3	El.	El.	El.	El.	El.	El.	El.	App.	El.	El.	El.	El.	El.	El.	s.	App.
Delaware	3	7–10		El.		El.	El.	El.	El.	.....	El.			El.	App.	App.	App.	App.
Maryland	24	3–7		El.	El.	El.	App.	El.		App.	El.			El.	El.	App.		App.
Virginia	100 18*a*	3–8		.....	El.	El.	App.	El.		El.	.....			El.	App.	App.	App.	App.
West Virginia	55	3			El.	El.	App.	El.		El.			El.		El.	El.	App.	App.

VII. COUNTY OFFICERS—*Continued*

State	No. of Counties	County Bd., No. of Members	County Judge	Probate Judge	Prosecuting Attorney	Sheriff	Coroner	Clerk of Court	Register of Probate	County Clerk	Register of Deeds	County Auditor	County Assessor	County Treasurer	County Surveyor	Supt. of Schools	Supt. of Poor	Health Officer
North Carolina	100	3–5			Dist.	El.	El.	El.		.....	El.			El.	El.	App.	App.	App.
South Carolina	44	Var.		El.	Dist.	El.	El.	El.		.....	s.	App.		El.		El.		App.
Georgia	152	3–5	sEl.	El.	Dist.	El.	El.	El.		El.	El.		App.	El.	El.	El.	s.	App.
Florida	52	5	El.	.....	Dist.	El.		El.					El.	El.	El.	El.		App.
Kentucky	120	3–8	El.	.....	El.	El.	El.	El.		El.			El.		El.	El.		App.
Tennessee	96	3	El.	.....	Dist.	El.	App.	El.		.....	El.	.....	s.	El.	App.	App.		App.
Alabama	67	5	.....	El.	Dist.	El.	El.	El.			.....		El.	El.	App.	El.		App.
Mississippi	79	5			El.	El.	El.	El.				El.	El.	El.	El.	El.		App.
Louisiana	64*b*	Var.			El.	El.	El.	El.		El.	.....		El.	App.	App.	App.		App.
Texas	253	3	El.	.....	El.	El.		El.		El.	.....	El.	El.	El.	El.	El.	App.	App.
Oklahoma	78	3		El.	El.	El.	El.			El.	El.		El.	El.	El.	El.	.....	App.
Arkansas	75	Var.	El.	.....	Dist.	El.	El.	El.		.....	.....		El.	El.	El.	App.		
Missouri	114	3		El.	El.	El.	El.	El.		El.	s.	s.	El.	El.	El.	El.		App.
Ohio	88	3	El.	El.	El.	El.	El.	El.		El.		El.	App.	El.	El.	App.		
Indiana	92	3(7)*c*	s.	s.	El.	El.	El.	El.			El.	El.	El.	El.	El.	App.	App.	App.
Illinois	102	Var.	El.	s.	El.	El.	El.	El.		El.	El.	.....	s.	El.	El.	El.	App.	
Michigan	83	Var.		El.	El.	El.	El.	.....		El.	El.	s.		El.	El.	El.	App.	
Wisconsin	71	Var.	El.	El.	El.	El.	El.	El.		El.	El.	.....	El.	El.	El.	El.	App.	App.
Minnesota	86	5–7		El.	El.	El.	El.	El.		.....	El.	El.		El.	El.	El.		.....
Iowa	99	3–7			El.	El.	El.	El.		.....		El.		El.	El.	App.	App.	App.
Kansas	105	3	El.	El.	El.	El.	El.	El.		El.	El.	App.		El.	El.	El.	App.	App.
Nebraska	93	Var.	El.	.....	El.	El.	El.	El.		El.	s.			El.	El.	El.		
South Dakota	63	1–5	El.	.....	El.	El.	El.	El.		.....	El.	El.	s.	El.	El.	El.		App.
North Dakota	53	3–5	El.	El.	El.	El.	El.	El.		.....	El.	El.	s.	El.	El.	El.		App.
Montana	43	3			El.	El.	El.	El.		El.	El.	El.	El.	El.	El.	El.		App.
Idaho	37	3		El.	El.	El.	El.	El.		.....	.....	.....	El.	El.	El.	El.		
Wyoming	21	3		.....	El.	El.	El.	s.		El.	.....		El.	El.	El.	El.		App.
Colorado	63	3–5	El.	.....	Dist.	El.	El.	.....		El.	.....		El.	El.	El.	El.	.....	.....
New Mexico	26	3		El.	Dist.	El.	.....	El.	El.		.....		El.	El.	El.	El.		.....
Arizona	14	3		El.	El.	El.	El.	El.		s.	El.		El.	El.	El.	El.		App.
Utah	27	3			El.	El.		.....		El.	El.	s.	El.	El.	El.	El.		
Nevada	16	3		.....	El.	El.	.....	.....		El.	El.	El.	El.	El.	El.	El.		
California*	58	3–5	El.	.....	El.	El.	El.	App.		El.	s.	El.	El.	El.	El.	El.		App.
Oregon	36	3		.....	Dist.	El.	El.	.....		El.	s.	El.	El.	El.	El.	El.		
Washington	39	3		.....	El.	El.	El.	.....		El.	.....	El.	El.	El.	El.	El.		App.

a. Cities. *b.* Parishes. *c.* 3 county commissioners; 7 members in the county councils. El., an elective county office. s., a county office in some counties. App., an appointive county office. ....., duties performed by some other officer. dist., elected or appointed for district smaller than a county. Var., number varies in different counties. Dist., elected or appointed for district larger than a county. * In Los Angeles county, the most populous county in California, the "short ballot" has been adopted. The only county officers elected by popular vote are the board of supervisors, auditor, district attorney, and assessor. All others are appointed by the board of supervisors.

STATE ADMINISTRATION

JOHN M. MATHEWS

Legislative Tendencies.—Progress in state administration during 1917, in common with developments in other governmental fields, has been affected by war conditions. To some extent the influence of these conditions has been in the direction of reaction. In enacting laws relating to state administration, since public attention has been largely focussed on our international relations, the legislatures have not always acted under the normal sense of public responsibility. An example of this tendency towards reaction is seen in the failure to incorporate adequate civil-service safeguards in the New York State Police, Military Census, and Food Supply Commission Acts. On the other hand, it is possible also to discern evidences of a quickened public interest due to the war, in public affairs in general, and of an increasing public impatience with the inefficient methods which heretofore have largely prevailed in the management of state business. Such influences also have affected the state legislatures, with the result that some important acts of a progressive character relating to state administration have been enacted.

The Governor.—During the year one state governor—J. E. Ferguson of Texas, was impeached and removed from office. This, however, was due to local causes and by no means indicates any impairment of the general position and prestige of the state governor. On the contrary, the importance of the governor's office has recently tended to increase. A condition of war naturally tends to accentuate the power of the executive head of the government, and although this is more especially true in the case of the Federal Government, it is also true to some extent in the case of the state governments. State governors have coöperated with the national authorities in the preparations for war, for example, assisting in the enforcement of the Selective Draft Act by suggesting the names of persons for appointment to local exemption boards, supervising the taking of military censuses of state resources, directing the work of state councils of defense, and organizing reserve militia forces or home guards. The position of the governor has also been strengthened in several states during the year, either directly or indirectly, through the consolidation of state boards and commissions, through the establishment of more efficient means for the enforcement of state law, in connection with the state budget, and by the grant of greater powers of appointment and removal. In Minnesota, for example, the governor was empowered to remove any statutory state officer upon the recommendation of the state Commission of Public Safety (Laws of 1917, Ch. 261), and in Oregon the governor was authorized to remove delinquent county clerks (Laws of 1917, Ch. 35).

In order to secure more effective coöperation between states, in addition to the regular annual conference attended by governors, ex-governors and governors-elect, there have been several special conferences of governors during the year. Conferences of the New England and the Middle States governors met at Boston and Philadelphia, respectively, to devise plans for putting those states on a war footing. A conference of the governors of the coal-producing states met in Chicago to consider the situation arising from the serious shortage of the coal supply. It has been suggested, also in resolutions passed by the legislatures of Kansas and California, that a congress of the states be held in the near future more particularly for the purpose of considering and recommending to Congress a plan for the separation of the sources of state and Federal revenues as well as to consider other matters of common interest to the states (Kansas Laws of 1917, Ch. 347; California Laws of 1917, p. 1862).

State Councils of Defense.—Councils of defense have been created in every state for the purpose of assisting in putting the states on a war footing and of coöperating more effectively with the Council of National Defense at Washington. In about a dozen states they have been established by formal legislative act, in the others they have been created by administrative act of the governors. They are appointed by the governor, or by the governor with the consent of the Senate, and vary in size from six to more than 100 members. They are sometimes composed of *ex-officio* state officers, the governor serving as chairman, but more frequently they are composed of prominent men in the state who hold no other public office. In the latter case they ordinarily hold office at the pleasure of the governor. The broad purposes for which some of these councils are created are indicated by the preamble to the act creating the California Council (Laws of 1917, Ch. 32):

> To make investigation into the effect of the occurrence of war upon the civil and economical life of the people of the state, to recommend to the governor measures to provide for the public security, the better protection of the public health, a fuller development of the economic resources of the state and the encouragement of military training.

In endeavoring to attain these objects, the powers which the councils may exercise are usually advisory in character, but sometimes they have been vested with more summary and far-reaching powers. Thus, the West Virginia Council may regulate mines, factories and railroads, fix prices, and suppress disorders. In Wisconsin the Council may control the distribution of the supply of food and fuel. In Minnesota the Commission of Public Safety has been granted the broad power to do all acts and things, not inconsistent with the law, for the protection of life, property and public safety (Laws of 1917, Ch. 261). For the carrying out of the work of the state councils, ample funds are provided in some states, as in Maryland and Minnesota, where in each case a credit of $1,000,000 was voted. In other states, however, especially where the councils do not rest on legislative authorization, the funds at their disposal are small.

Enforcement of State Law.—The withdrawal of the state militia or National Guard from the various states for war service under the Federal Government has left the states with the problem of providing some other means of maintaining order within their boundaries in extraordinary cases. To meet this emergency a number of states, including Maryland, California, Illinois, Massachusetts, Pennsylvania and Texas, have provided by law for the creation of a reserve militia or home-defense force. Maryland (Laws of 1917, Extra Sess., Ch. 26) authorized the governor to recruit and organize a body of 1,000 troops to be known as the Maryland State Guard, to be distinct from the Maryland National Guard. The governor is authorized to call for volunteers, and if the number of volunteers is insufficient, he may draft as many male citizens as are required. By a California act (Laws of 1917, Ch. 689) a State Defense Guard was created, to be manned by male citizens from 30 to 50 years of age, and to comprise ten companies of 100 men each. Subject to the control of the governor and of the adjutant-general as superintendent, the members of this guard are to enforce the laws of the state and to perform such other duties as the governor may direct, and for this purpose they are vested with all the powers of peace officers. They are not, however, to be used in strikes or industrial disputes. Under the authorization of the Illinois act providing for the creation of a State Reserve Militia (Laws of 1917, p. 782), Governor Lowden issued in September a proclamation calling for 6,000 volunteers to enlist in this body for a term of two years. It is expected that practically all these troops will come from the state Council of Defense training corps, which has company units already organized at points all over the state.

These state reserve-militia forces are mere temporary expedients to supply the lack of a home guard during the period of the war. It is beginning to be recognized more generally that there is need for a permanent state constabulary with a more efficient organization than the ordinary state militia. In June, serious race riots occurred at East St. Louis, Ill., involving considerable loss of life and property (see also XV, *Labor*), which might have been prevented by a competent state constabulary. The grand jury which afterward investigated these riots recommended that

> in order to be on constant guard against such disasters, there be established a state police force, partly mounted, composed of 1,000 or more trained policemen on constant duty, to be moved in sections from one place in the state to another to enforce all law. If a portion of this constabulary were brought from a distant part of the state, they would not be affected by local prejudices and opinions. Each of these state constables should be given all the powers throughout the state that the sheriff of the county has in his own county and police of every section of the state under the direction and authority of the governor.

The governors of several states, including South Dakota, South Carolina and New Hampshire, in their messages to the legislatures of 1917, recommended the creation of state constabularies. Such bodies were authorized by law in South Dakota, New York and Rhode Island. The South Dakota act creates a constabulary composed of all the county sheriffs, with a state sheriff, appointed by the governor, at its head (Laws of 1917, Ch. 355). The New York act creates a force modelled on the Pennsylvania constabulary, but unfortunately fails to provide civil-service safeguards to keep the force out of politics (Laws of 1917, Ch. 161). The character of the force will depend largely on the character of the superintendent, appointed by the governor.

The South Dakota constabulary was formed primarily to enforce the prohibitory liquor law. The spread of state-wide prohibition to nearly half the states (see XIV, *The Liquor Problem*), as well as the prohibition of the sale of liquor near the military camps established in many states, has increased the need for energy and efficiency in the means adopted for the enforcement of state law. Various methods designed to secure this increased efficiency have been proposed and adopted, of which the establishment of a state constabulary is one of the most important. In other states the method of providing for the removal of delinquent law-enforcing officers has been adopted. In some of these states the power of removing such officers has been placed in the hands of the courts. Thus, in Indiana, Montana and Utah, local law-enforcing officers, such as local prosecuting attorneys, sheriffs, constables, mayors and police officers, who fail or refuse to enforce the prohibitory liquor law, are subject to removal by the circuit or district courts of the counties in which such officers respectively reside (Indiana, Laws of 1917, Ch. 4; Montana, Laws of 1917, Ch. 143; Utah, Laws of 1917, Ch. 2). Under this method, however, efficiency in securing the objects in view may be impeded by the technicalities of judicial procedure. Consequently, some degree of centralized administrative control over local law-enforcing officers is desirable. This is recognized by Governor Milliken of Maine, who, in his message to the legislature of 1917, after declaring himself in favor of prohibition, advocated the adoption of a constitutional amendment giving the governor power to remove from office a sheriff or county prosecuting attorney for neglect of duty in the enforcement of the law. This need is recognized to some extent also in the Indiana and Utah laws above cited. The Indiana act provides that for the enforcement of the law, the state attorney-general may appoint assistants who shall have power to perform any act which the local prosecuting attorneys might lawfully do. Similarly, under the Utah statute, the governor is authorized to deputize all necessary assistants to make arrests, seize property, initiate and prosecute criminal proceedings for the removal of officers, and to perform any act which may be done by any executive, peace or prosecuting officer. Greater centralized administrative control over the enforcement of law is provided also in Oregon by an act (Laws of 1917, Ch. 58) which authorizes the governor to employ special agents for the apprehension and conviction of criminals, the return of fugitives from justice, the investigation of cases in which the governor may believe the laws of the state are being violated, the supervision of men on parole, or the collection of evidence in any case in which the state may be interested.

State Finance.—The extent to which the need for a revision of state financial methods is realized may be indicated by the fact that 23 governors in their messages to the legislatures of 1917 recommended the introduction of more effective and economical state budget systems. Governor Lister of Washington, for example, urged that

> the governor, as chief executive officer for the state, ought to have the full responsibility for the preparation of the budget placed upon him. The legislature ought to retain to itself the right to reduce any amounts he might recommend in the budget, but to make the budget truly effective, the legislature ought not to have the power to increase amounts recommended.

Although the states, with the exception of Maryland (*A. Y. B.*, 1916, p. 201), have not yet seen fit to go this far, some progress has been made during the year towards the adoption of more effective budget methods. Under an act of the Kansas legislature (Laws of 1917, Ch. 312) all persons and all state officers or boards requesting appropriations from the state must present such requests to the governor prior to a certain date on uniform blanks furnished by the state auditor. At the same time the governor receives from the state financial officers a statement of the financial condition of the state. For the purpose of investigating the necessity of the appropriations asked for, the governor is authorized to hold hearings and to summon witnesses. The requests are then to be transmitted by the governor to the legislature, with his recommendations thereon, in such form as to be easily understandable by the average citizen.

In an Illinois act (Laws of 1917, p. 19) provision is made for the preparation of a budget under the supervision of the Department of Finance. The director of finance is empowered to investigate all items and to revise the estimates before submitting them to the governor, who transmits them to the legislature with his recommendations. Thus the budget, when it reaches the legislature, has the official support and authority of the governor. (See also XIII, *Public Finance.*)

Another direction in which the states are making progress in the management of finances is in centralization in the purchase of supplies. In the Illinois act just mentioned, the state Department of Finance is authorized to prescribe uniform rules governing specifications for purchases of supplies for the several departments, while the actual purchase of most of the supplies needed by the various state departments and institutions is concentrated in the hands of the state Department of Public Works and Buildings. By a recent act of Indiana (Laws of 1917, Ch. 79) the governor is authorized to request the board of trustees of each state institution to select one of its members to serve on a joint purchasing committee to make joint purchases of supplies for the use of such institutions. Provision is made also in North Carolina for a coöperative purchasing committee composed of the superintendents of certain state hospitals and schools (Laws of 1917, Ch. 150).

Consolidation of State Boards.—The movement for the consolidation of the numerous state boards and commissions continues to gather headway. The need for progress in this direction was thus forcibly indicated by Governor Capper of Kansas in his annual message of 1917:

> Kansas has admittedly outgrown our present system of government. It is a hodge-podge; a patch-work; antiquated, cumbersome, wasteful, inefficient, entirely out of keeping with the more scientific systems of business now employed by private concerns and many other states. A multiplicity of boards, commissions, bureaus and departments duplicate the work of one another, divide responsibility which should be concentrated, and by interfering with one another often retard the public business.

In order to remedy these conditions some states are appointing commissions to investigate the situation. By a concurrent resolution of the Oregon legislature (Laws of 1917, p. 958) the governor is authorized to appoint a commission of seven representative business men to investigate the state administrative agencies and to make a comprehensive report of its findings with recommendations for consolidation and increased economy and efficiency. In New Jersey also commissions were appointed to investigate the feasibility of consolidating the Passaic Valley Sewerage Commission with the North Jersey District Water-Supply Commission, and to inquire into methods of management of all institutions other than penal or correctional, with the idea of effecting centralization of control in the interest of increased efficiency.

Other states have taken positive steps in the actual consolidation of administrative agencies. Thus, in North Carolina a consolidated board of directors for the three state hospitals for the insane was established (Laws of 1917, Ch. 150). In Kansas a state Board of Administration was created (Laws of 1917, Ch. 297) to constitute the board of trustees for the control of all the educational, benevolent, and penal institutions of the state. For this purpose the board appoints a business manager to manage such institutions with the advice of the board and to purchase all necessary supplies. North Carolina (Laws of 1917, Ch. 58) and Kansas (Laws of 1917, Ch. 309) also have established state accounting agencies to supervise the records and accounts of the various state officers and institutions. In Vermont a state Board of Control, composed of the governor and three other state officers together with an appointee of the governor, has been established with general supervision over all state departments (Laws of 1917, No. 32). In this connection may be mentioned an Ohio act which abolishes the state Board of Health and substitutes therefor a Public Health Council of four members and the state commissioner of health.

Undoubtedly, however, the most important act of consolidation passed during the year was the Illinois Administrative Code (Laws of 1917, p. 2), which was enacted largely as the result of the energy and initiative of Governor Lowden. It abolishes more than 50 separate administrative agencies and consolidates them into nine main departments, *viz.*, finance, agriculture, labor, mines and minerals, public works and buildings, public health, trade and commerce, registration and education, and public welfare. Each department is in charge of a director appointed by the governor with the consent of the Senate.

Although some notable advances have thus been made in the direction of the consolidation and the abolition of state administrative agencies, a number of new agencies of this character have been created. Some of the acts creating new agencies have been passed as a result of the growing tendency towards state socialism, and have in view the reduction of the high cost of living by state action in eliminating the middleman or by other means for the benefit of both the producer and the consumer. New York, for example, has passed the Wicks market law, establishing a state Department of Farms and Markets, in charge of a council of 11, with wide powers of investigation and regulation. North Dakota, under the guidance of the National Non-partisan League, has passed a law establishing the new office of State Inspector of Grains, Weights and Measures, with large powers of regulation over the methods of weighing and grading grain.

References.—H. J. Hughes, "Making a State Efficient for Democracy", *Review of Reviews*, Oct., 1917, 407; Wm. Hard, "Coöperating with Washington", *New Republic*, Sept. 15, 1917; 183; W. A. Robinson, "The Governors in 1917", *New Republic*, March 3, 1917, 127; *American Political Science Review*, xi, 310, 322, 539, 711; J. M. Avery, "Vermont State Government Reorganized", *Survey*, May 12, 1917, 148.

POPULAR GOVERNMENT AND CURRENT POLITICS

Arthur N. Holcombe

State Constitutional Conventions.—Throughout the country the messages of the governors to the legislatures of 1917 were inspired by the thought that our state governments need reorganization. Many of the governors advocated the adoption of some form of executive budget. Not a few also recommended the establishment of an executive cabinet. A number urged the further centralization of state administration. A few of these suggestions were adopted. Most of them—all those which required extensive constitutional changes—were rejected or ignored by the bodies to which they were offered. The executive budget, the cabinet system of executive organization, power for the governor to remove sheriffs, district attorneys, and other local law-enforcing officers, where necessary for the proper enforcement of law—such changes in the existing distribution of power mean limitation of the authority of legislatures and impairment of the prestige of local politicians. The former directly, the latter indirectly, were blows aimed at the very bodies to which the governors' suggestions were offered. They tended above all else to exalt the offices of the governors themselves. It is not surprising that these suggestions were generally inacceptable to the legislatures. From reluctant legislatures the advocates of a better organization of state government turned to more disinterested instruments. Already in 1916 constitutional conventions had been authorized by the people of two states, Massachusetts and New Hampshire. In 1917 public interest in the constitutional convention as an instrument of reform developed in all sections. Indiana and Arkansas provided for the immediate election of delegates to conventions; Tennessee provided for an immediate popular vote on the question of calling a convention and Illinois provided for a popular vote at the next general election; North Carolina and Washington provided for popular votes in 1918. In Tennessee, however, the people refused to call a convention, and in Indiana the Supreme Court declared that the legislature had exceeded its powers in calling a convention without first consulting the people. The Arkansas convention was not to convene until towards the end of the year, and the New Hampshire convention not until 1918. So the Massachusetts convention held the center of the stage.

The Massachusetts Constitutional Convention.—The Massachusetts Constitutional Convention, the fourth in the history of the Commonwealth and the first since 1853, met on June 6. The delegates, 320 in number, were nominated on April 3 at a non-partisan primary, and elected on May 1 after a campaign marked by the absence of ordinary partisan controversy and overshadowed by the entrance of the United States into the war. Indeed there were some who urged that the Convention should not attempt to revise the constitution at that time, but should adjourn until after the war. The precedent, however, established by the first Massachusetts Constitutional Convention, which framed the existing constitution of the state during the Revolutionary War, was generally regarded as sound. (See also *A. Y. B.*, 1916, p. 50.)

The Issues.—Governor McCall in his message to the legislature of 1916, advocating a constitutional convention, had specified the adoption of biennial instead of annual state elections, the short ballot, and the executive budget, as reforms which might well be considered by the Convention. But none of these received much attention from the voters during the campaign. The principal issue was the demand for an amendment to provide for the direct popular initiative and referendum, advocated most conspicuously by an organization styled the Union for a Progressive Constitution, representing a coalition of radical Democrats and former Progressives. This organization placed in the field a ticket of 16 candidates for election in the state at large, and attempted to secure the election from the congressional and legislative districts of delegates pledged to the submission of an initiative and referendum amendment to the people. The Conservative forces, opposed to such an amendment, supported 16 so-called "unpledged" candidates for election in the state at large, and endorsed candidates in the districts who refused to pledge themselves to the initiative and referendum. Twelve of the Union's candidates in the state at large were successful, and a majority of the candidates elected in the districts were also pledged to the initiative and referendum. The division between the supporters and opponents of the initiative and referendum was close, however, and from the start the contest between these factions gave a dramatic interest to the convention.

The Work of the Convention.—The convention comprised a large number of able and experienced state politicians. The Conservatives scored the first victory by the election of former Governor John L. Bates to the presidency. After the adoption of rules and the appointment of a score of committees, the convention adjourned for a month, in order that the committees might hold public hearings on all proposed amendments and have time for deliberation before reporting to the Convention. Altogether 301 separate proposals for the amendment of the Constitution were referred to the committees, of which less than one-tenth were eventually reported favorably to the Convention. Of those favorably reported the most noteworthy were the following: (1) the initiative and referendum; (2) the so-called anti-aid amendment, prohibiting the appropriation of public money for the support of any institution not under public control; (3) the so-called public trading amendment, authorizing cities and towns to deal in the necessaries of life; (4) the so-called absentee voting amendment, to safeguard the right of citizens to vote, when absent from the state, especially when absent on military duty; (5) a state-wide "bone-dry" prohibition amendment; (6) an amendment empowering the legislature to authorize cities and towns to develop and sell lands for homesteads for their citizens; (7) an amendment empowering the legislature to establish a system of social insurance, including old-age pensions, pensions for disability, health insurance, maternity benefits, insurance against unemployment, etc.; (8) an amendment providing for one day's rest in seven for industrial wage earners; (9) an amendment to lengthen the term of the governor from one to two years; and another increasing his powers, (a) by vesting in him alone the power of removal of administrative officers, (b) by empowering him to attend sessions of the legislature and to speak on pending bills, (c) to veto items in appropriation bills and to return other bills to the legislature for specific amendment, and (d) to refer to the people for their approval or disapproval measures which the legislature should refuse to pass, although recommended by him; (10) an amendment providing for an executive budget and limiting the power of the legislature to contract debt; and (11) an amendment providing for the appointment by the governor of an executive cabinet and abolishing popular elections of several of the minor state officials.

Amendments Adopted by the Convention.—Only three of these proposed amendments were adopted by the Convention in time for submission to the voters at the election in November. Two of these, the public trading amendment and the absentee voting amendment, were emergency measures, and were adopted with comparatively little debate. The former, however, was first modified so as to be much less radical than as originally reported by the committee. In its final form it provided that municipalities in time of emergency should have power to procure supplies of food and other necessaries and distribute them to the public at reasonable prices. Both these amendments were ratified by the people by large majorities.

The Anti-Aid Amendment.—The Anti-aid amendment, so-called, gave rise to, or rather marked the culmination of, a long and at times bitter controversy. Sixty years ago, in response to the Native American or "Know-nothing" agitation, the State adopted certain constitutional amendments designed to prevent alien immigrants from obtaining an excessive influence in public affairs. One of these prohibited the appropriation of public money to the support of common schools under sectarian control. It was believed by many that there was a tendency to construe the term "sectarian" as synonymous with Catholic. In recent years, moreover, there had been an open agitation to extend the prohibition to cover all kinds of institutions as well as common schools. A so-called anti-sectarian amendment, believed by Catholics to be in effect an anti-Catholic amendment, had been advocated for several years before the legislature, and religious controveries were playing an increasingly disturbing part in state politics. The Bill of Rights committee, to which the matter was referred, reported unanimously a proposed amendment prohibiting appropriations of public money, not only to sectarian institutions, but to any institutions not under public control. Thus the anti-sectarian amendment became an anti-public-aid-to-private-institutions amendment. In this form it was accepted by all parties as an inoffensive solution of a delicate and troublesome problem. In the Convention itself it received the votes of 90 out of 99 Catholic delegates and of 185 out of 201 non-Catholic members present and voting. It was ratified by the people by a large majority.

Initiative and Referendum.—The proposed amendment which aroused the greatest interest in the Convention was the initiative and referendum. During the campaign for the election of delegates, the Union for a Progressive Constitution had published a draft of a proposed initiative and referendum amendment, which served to some extent to define the principal issue in the election. Though most of the successful candidates were supposed to be in favor of some sort of an initiative and referendum, they were not pledged to support that particular measure, and the success of the Conservatives in electing their candidate for president of the Convention made the result of the contest over the "I. and R.," as it was commonly called, uncertain. The debate was protracted until it was neither possible to submit an "I. and R." amendment to the people in November, nor any other amendment except the three already mentioned. Finally on Nov. 28, nearly five months after the first meeting of the Convention, an "I. and R." amendment was adopted by a vote of 163 to 125, to be submitted to the people at the election in Nov., 1918. The Convention then adjourned until June, 1918.

The Massachusetts initiative and referendum amendment contains several novel features. First, each initiative or referendum petition must be signed by ten original petitioners who thereby assume responsibility for the management of the petition in its subsequent stages. In the case of initiative petitions, they have the power to decide whether to accept an alternative measure, if such a measure should be adopted by the legislature, or to complete their petition and submit their own measure to the people, either with or without amendments. Thus it is easier to perfect a measure, initiated directly by the people, than under the procedure adopted in any other state. Secondly, in the case of initiated constitutional amendments, it is provided that no such amendment shall be submitted to the people unless it shall first be approved by at least one-fourth of all the members elected to both houses of the legislature, sitting in joint convention, in two successive years. This provision was adopted as the result of a compromise in the convention between the radicals and a portion of the conservatives, and was intended to prevent the submission of proposed constitutional amendments without evidence of a more substantial demand than is afforded by the signing of a petition. On the other hand, the procedure for the proposal of amendments by the legislature was simplified. It was provided that a majority of all the members elected to both houses, sitting in joint convention, in two successive years, might submit amendments to the people, whether as independent proposals or as alternatives to measures originally proposed by popular petition. Obviously the constitutional initiative is not intended to be the principal instrument for the amendment of the constitution, but rather to be used as a spur to incite the legislature to a more effective use of its own powers. The Massachusetts plan for the initiative and referendum was worked out with unusual care; and in several respects besides those noted above it should be of interest to constitutional conventions in other states.

WOMAN SUFFRAGE

In America, as in England, there was much speculation as to the effect of the war upon the woman suffrage movement. It was argued that the war psychology, exalting the ideals of force and tending to autocratic measures of government, would revive the obsolete contention that women should not vote because they could not bear arms; and it was prophesied that, in any event, the preoccupation of the public with war activities would bar out the question of woman suffrage.

Exactly the reverse seems to have happened. Women's essential contribution to the country's war needs apparently has emphasized their claim to political recognition, and the year 1917 has recorded the greatest actual gains in the history of the American suffrage movement. New York has been added to the number of full suffrage states, presidential and municipal suffrage has been extended to women in other states, and an amendment to the federal constitution, first proposed by Susan B. Anthony and introduced in Congress in 1878, is now on the calendar of both houses of Congress, with good chances of passage at the present session. In this event, it will be possible for the ratification by state legislatures to be completed in time for all the women of the United States to vote in the presidential election to take place on 1920.

It was the presidential election in November, 1916, that gave irresistible significance to the suffrage movement as a national political issue. The fact that states where women vote were the states that determined the election was inescapable, and suffragists began at once to intensify their political program. The National American Woman Suffrage Association initiated a campaign to win presidential suffrage through state legislatures, as had been done in Illinois, thereby to increase the pressure upon both political parties for congressional action.

On Jan. 23, a presidential suffrage bill became a law in North Dakota; Feb. 21, in Ohio; Feb. 28, in Indiana; April 1, in Rhode Island; April 18, in Michigan; April 21, in Nebraska. In Arkansas, instead of presidential and municipal suffrage, it proved more practicable to secure primary suffrage, and this bill became a law March 6. As Arkansas has always been a one-party state, primary suffrage is of more practical value to the women than presidential and municipal suffrage would have been. It gives them a vote in the primaries on all questions that the men may vote upon, and the primary result is equivalent to an election.

With this gathered strength, the federal suffrage amendment was pushed, even in the special war session of Congress, to a position of advantage in both Houses. In the Senate it reached the calendar. In the House, although it did not reach the calendar, a Committee on Woman Suffrage was created, by vote of the House on Sept. 24, in compliance with the demand of suffragists for special consideration of their case by a committee less overcrowded with work than the Judiciary Committee, to which the amendment had previously been referred.

Two setbacks to the onward sweep of the movement occurred in October and November. The Indiana suffrage law, passed by the legislature in February, was contested in the courts, and declared unconstitutional by the State Supreme Court. In Ohio the opponents of woman suffrage were able to secure a referendum of the state legislative act granting presidential and municipal suffrage, and this referendum, held Nov. 6, resulted in a majority of 144,806 against suffrage.

On the same date, however, Nov. 6, New York State, by referendum vote, adopted an amendment to its constitution, granting full suffrage to women on the same terms as men. The election figures show 703,129 for suffrage, with 600,776 against, a favorable majority of 102,353. The New York referendum in 1915, when 553,348 votes were cast for the amendment, and 748,332 votes against, showed an adverse majority of 194,984.

This victory admittedly supplied tremendous pressure for the national constitutional amendment in Congress. It nearly doubled the number of representatives in Congress for whom women vote, and added 45 to the number of presidential electors chosen by women as well as men. The visible political strength of the woman suffrage movement stands now as follows:

Equal suffrage states	12
Presidential suffrage states	5
Primary suffrage states	1
Representatives for whom women vote	
In the House	90
In the Senate	26
Presidential electors	193

In other words, women now have a voice in the election of practically one-fifth of the House, more than one-fourth of the Senate, and nearly two-fifths of the electoral college. There are 10,121,931 women over 21 years of age in the states where women may vote for President, and 5,758,021 women of voting age in the full suffrage states.

The full suffrage states are (in reversed order of the suffrage grant): New York (1917), Montana (1914), Nevada (1914), Kansas (1912), Oregon (1912), Arizona (1912), California (1911), Washington (1910), Idaho (1896), Utah (1896), Colorado (1893), Wyoming (1869).

The partial suffrage states are as follows: Illinois (1913), presidential and municipal suffrage; Arkansas (1917), primary suffrage; Michigan (1917), presidential suffrage; North Dakota (1917), presidential and municipal suffrage; Rhode Island (1917), presidential suffrage; Nebraska (1917), presidential and municipal suffrage.*

Aggressive use henceforth of the political strength of women is the program of the National American Woman Suffrage Association, determined at its 49th annual convention Dec. 12 to 15. By unanimous vote of the convention, it was decided to put the organized strength of the Association's 2,000,000 members into the congressional elections of 1918, should the federal woman suffrage amendment not be passed at the present session of Congress. The Association is organized by states and congressional districts, and the purpose is "to select and enter enough senatorial and congressional campaigns to change a sufficient number of votes to pass the amendment in the next Congress in event of failure in the present session."

On Jan. 10, 1918, the House of Rep. at Wash. voted by the necessary two-thirds majority to submit the federal suffrage amendment to the states for ratification. The actual vote was 274 to 136. The affirmative majority consisted of 165 Republicans, 104 Democrats, and 5 others. In the negative were 33 Republicans, 102 Democrats, and 1 other. The suffragists immediately turned their attention to the Senate, where a vote may be expected during the present session.

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* In addition to this list, Vermont women have municipal suffrage, and the women of New Jersey, Delaware, New Hampshire, Massachusetts, Connecticut, Kentucky, Mississippi, Louisiana, Oklahoma, Wisconsin, Minnesota, Iowa, South Dakota and New Mexico may vote on school and bond or tax issues. Ten cities or towns in Florida, 3 in Ohio, 1 in Maryland, 1 in North Carolina, 2 in Delaware, and 1 in Tennessee have municipal suffrage.

AMENDMENTS TO STATE CONSTITUTIONS

On the following pages are given brief digests of the constitutional amendments submitted to the people of the various states during the year 1917, with the official returns of the votes thereon, and amendments pending before or passed by the state legislatures for submission in a subsequent year. Many of the important amendments are discussed in detail in other departments of the YEAR BOOK; full references will be found in the Index.

Arkansas.—The legislature of 1917 summoned a constitutional convention to meet on Nov. 19, 1917, delegates to which, numbering 114, were elected on June 26. (See also *Popular Government and Current Politics, supra.*)

California.—To be submitted in November, 1918:

Amending Art. I, Sec. 14, relating to compensation for the taking of private property for public use.

Amending Art. II, Sec. 1, relating to the rights of suffrage and qualifications for suffrage.

Amending Art. IV, Sec. 34, concerning special appropriation bills.

Amending Art. VI, Sec. 1, relating to judicial powers.

Amending Art. VI, Sec. 4, relating to the Supreme Court and District

Courts of Appeals, and providing for two divisions of the District Courts of Appeal of the 1st and 2d appellate districts.

Amending Art. IX, Sec. 9, concerning the powers of the board of regents of the University of California.

Amending Art. XI by adding Sec. 7½a, concerning the consolidation of city and county government, and the framing of charters therefor, and the amendments of such charters.

Amending Art. XI, Sec. 8½, relating to city charters and to provisions therein for municipal courts.

Amending Art. XI, Sec. 16½ concerning the deposit of moneys belonging to the state, or to any county or municipality within the State, in any bank or banks.

Amending Art. XI, Sec. 18, relating to municipal indebtedness.

Amending Art. XI, by adding Sec. 18½, relating to the reimbursement of official funds held by the treasurer of Los Angeles county.

Amending Art. XI by adding Sec. 20, concerning the taking of property for public use and additional adjoining or neighboring property, and for the payment therefor.

Amending Art. XII, Sec. 3, relating to the liability of stockholders and directors for debt incurred.

Amending Art. XIII by adding Sec. 1b, relating to the exemption from taxation of Y. M. C. A. and Y. W. C. A.'s properties used for association purposes.

Amending Art. XIII by adding Sec. 1b, relating to the exemption of the property of cemeteries not conducted for profit, from assessment and taxation.

Amending Art. XIII, by adding Sec. 5, relating to the reimbursement to cities for taxes lost on account of exemptions.

Amending Art. XX, Sec. 21, concerning the compensation for workmen and their dependents, for injury, disability, and death, irrespective of the fault of any party.

Amending Art. XX, by adding Sec. 22, concerning the giving of health insurance to individuals with limited means, and their dependents, during illness.

Connecticut.—Passed by the Legislature of 1917, to be submitted to the Legislature of 1919:

Amending Art. VIII, as amended by Art. XXIII, extending the suffrage to women.

Amending the constitution, prohibiting the manufacture and sale of intoxicating liquors after the first Monday of January, 1922.

Delaware.—Passed by the legislature of 1917, to be submitted to the legislature of 1919.

Amending Art. III, Sec. 13, relating to the power of the Governor to remove certain officers.

Amending Art. IV, Sec. 4, relating to the time of payment of salaries of the judiciary.

Amending Art. IV, Sec. 11, relating to Orphans' Courts.

Amending Art. IX, Sec. 1, prohibiting special charters to corporations, except municipal corporations, banks, trust companies possessing banking power, or corporations for charitable, penal, reformatory or educational purposes.

Amending Art. XI, Sec. 15, relating to the compensation of members of the General Assembly.

Florida.—To be submitted in November, 1918:

Amending Art. XII, Sec. 8, increasing the millage for the support of the public free schools.

Amending Art. XIX, Secs. 1, 2, and 3, prohibiting the sale of liquors, to be effective January, 1919.

Georgia.—To be submitted in November, 1918:

Amending Art. II, Sec. 1, creating the county of Atkinson.

Amending Art. II, Sec. 1, creating the county of Treutlen.

Amending Art. VI, Sec. 13, fixing the compensation of the judiciary.

Amending Art. VII, Sec. 2, exempting school endowments from taxation.

Idaho.—To be submitted in November, 1918:

Amending Art. IV, Sec. 1, abolishing the office of Superintendent of Public Instruction.

Amending Art. VIII, Sec. 1, establishing a debt limit of one per cent. of the assessed valuation of taxable property in the state.

Amending Art. XI, Sec. 4, exempting coöperative associations from the provisions relating to the manner of voting for directors or managers of incorporated companies.

Amending Art. XII, Sec. 4, permitting counties and municipalities to give financial aid to fair associations not organized for profit.

A proposal of the legislature for the calling of a constitutional convention will be submitted at the same election.

Illinois.—Amendment to Art. IX, authorizing the legislature to provide for the classification of personal property for purposes of taxation. Submitted on November 7th, 1916, and reported to have been adopted (*A. Y. B.*, 1916, p. 204), has been held by the State Supreme Court to have failed because, while it received a majority of the votes cast for members of the General Assembly, it did not receive a majority of the votes polled.

A proposal of the legislature for the calling of the constitutional convention will be submitted in November, 1918.

Indiana.—Passed by the legislature of 1917, to be submitted to the legislature of 1919.

Amending Art. II, Sec. 15, extending the suffrage to women.

Amending Art. XV, Sec. 2, providing that the term of office or salary of any officer, fixed by the constitutional law, shall not be increased during the term for which such officer was elected or appointed.

By an act approved Feb. 1, 1917, the General Assembly provided for the election, on Sept. 18, of delegates to a convention to revise the constitution. This Act was declared null and void by the Supreme Court, on July 13, in the case of Bennett vs. Jackson, on the ground that since the question of calling a constitutional convention had not been submitted to the referendum vote the legislature had exceeded its authority.

Iowa.—Submitted October 15:

Amending Art. I, Secs. 26 and 27, prohibiting the manufacture and sale of intoxicating liquors. Rejected, 214,693 for, 215,625 against.

Kansas.—To be submitted in November, 1918:

Amending Art. V, Sec. 1, restricting the suffrage to citizens of the United States.

Amending the constitution providing for a permanent income for the state educational institutions.

Kentucky.—Submitted November 6:

Amending Sec. 201, prohibiting the consolidation of the interests of competing public utility corporations except telephone companies. Adopted,[1] 49,986 for, 30,192 against.

Louisiana.—To be submitted in November, 1918:

Amending Art. 198, exempting persons in the military service from the payment of poll taxes.

Maine.—Submitted September 10:

Amending Art. II, Sec. 1, extending the suffrage to women. Rejected, 20,604 for, 38,838 against.

Amending Art. IV, Sec. 3, relating to the apportionment of representatives in the event of merger of towns. Adopted, 22,013 for, 21,719 against.

Amending Art. VII, Secs. 1-5, relating to the militia. Rejected, 20,585 for, 23,912 against.

Amending Art. IX, Sec. 10, empowering the governor to remove sheriffs for cause. Adopted, 29,584 for, 25,416 against.

Amending Art. IX, Sec. 16, empowering the legislature to authorize the dividing of towns into voting districts for state and national elections. Rejected, 22,588 for, 24,593 against.

Massachusetts.—Submitted November 6:

Delegates to the Constitutional Convention approved by the voters in 1916, were elected on May 15th, and the Convention assembled on June 6th. These proceedings are reviewed on another page. (See *Popular Government and Current Politics, supra.*) The Convention submitted the following amendments on Nov. 6:

Amending Art. XVIII, of the Articles of Amendment, prohibiting the use of public funds for the support of sectarian institutions. Adopted, 206.329 for, 130,357 against.

Amending the constitution authorizing the legislature to provide for the supplying of the necessaries of life by the State, cities and towns in time of war or other emergency. Adopted, 261,119 for, 51,826 against.

Amending the constitution authorizing the legislature to provide for absentee voting. Adopted, 231,905 for, 76,709 against.

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[1] No returns from two counties.

Michigan.—Submitted April 2:

Amending Art. III, Sec. 1, permitting absent voting by soldiers, sailors and railway trainmen. Adopted, 216,270 for, 114,594 against.

Amending Art. VI, Sec. 21, increasing the annual salaries of the secretary of state, state treasurer, and auditor-general from $2,500 to $4,000. Rejected, 148,625 for, 193,119 against.

Amending Art. VIII by adding Sec. 15a, permitting drainage districts to issue bonds. Adopted, 198,918 for, 139,027 against.

Amending Art. VIII, Sec. 26, extending to the state the right to construct, improve and maintain highways, bridges and culverts. Adopted, 209,559 for, 126,871 against.

Amending Art. X by adding Sec. 20, empowering the state to acquire, hold and dispose of railroad property under prescribed conditions. Adopted, 242,969 for, 100,722 against.

To be submitted in November, 1918:

Amending Art. III, Sec. 1, extending the suffrage to women.

Amending Art. XVII, Sec. 3, providing for the printing of constitutional amendments and other special questions on a single ballot.

Minnesota.—To be submitted in November, 1918:

Amending Art. XV by adding Sec. 6, prohibiting the manufacture, sale, or importation of intoxicating liquors after July, 1920.

Missouri.—To be submitted in November, 1918:

Amending Art. X, Sec. 11, limiting the rates of taxation in counties, cities and school districts.

Amending Art. X, Sec. 12a, permitting cities to incur additional indebtedness for highway improvement.

Amending Art. X by adding Sec. 22a, providing for an additional state tax of 10 cents per $100 assessed valuation, for road purposes.

Amending Art. X by adding Sec. 23, permitting road districts to levy a special tax not exceeding 75 cents per $100 assessed valuation for road purposes when approved by a majority of the qualified voters.

Amending Art. XI, Secs. 6 and 7, providing funds for the maintenance of public schools.

Amending the constitution, prohibiting the manufacture, sale and giving away of intoxicating liquors after Nov. 1, 1919.

Montana.—To be submitted in November, 1918:

Amending Art. XII, Sec. 2, providing that evidence of debt may be exempt from taxation.

Nevada.—Passed by the Legislature of 1917, to be submitted to the Legislature of 1919:

Amending Art. VI, Sec. 4, authorizing the calling of a district judge to the Supreme Court bench in case of inability of a Justice of the Supreme Court to sit in any cause.

New Mexico.—Submitted November 6:

Amending Art. VIII, Sec. 1, relating to taxes levied upon tangible property. Rejected, 14,107 for, 25,077 against.

Amending Art. VIII, Secs. 12 and 25, providing for the division of the state into nine judicial districts, with one judge in each district. Rejected. 16,822 for, 22,036 against.

Adding Art. XXIII, prohibiting the manufacture or sale of intoxicating liquors after Oct. 1, 1918. Adopted. 28,732 for, 12,147 against.

New York.—Submitted November 6:

Amending Art. II, Sec. 1, extending the suffrage to women. Adopted, 703,129 for, 600,776 against.

Amending Art. VIII, Sec. 10, relating to the limitation of indebtedness of cities of the first class. Adopted, 591,728 for, 420,303 against.

New York passed by the Legislature of 1917, to be submitted to the Legislature of 1918:

Amending Art. 1, Sec. 7, relating to the convention to be called for the taxing of private property.

Amending Art. II, Sec. 1, prescribing the illiteracy test for voters.

Amending Art. II, Sec. 4, relating to the enactment of election and registration laws.

Amending Art. III, Sec. 6, relating to the salary and traveling expenses of members of the legislature.

Amending Art. III, Sec. 18, prohibiting the introduction of private or local bills in certain cases.

Amending Art. XII, Sec. 1, and Art. III, Secs. 26 and 27, empowering the legislature to grant a larger measure of home rule to cities and counties, and relating to the form of government of cities and counties.

Amending Art. V, Sec. 9, relating to the preferential employment and promotion of honorably discharged soldiers, sailors and marines.

Amending Art. VI, Sec. 18, relating to the establishment and jurisdiction of children's courts and courts of domestic relations.

Amending Art. VII, Secs. 4 and 11, relating to the period and payment of debts contracted by the state.

Amending Art. VII, Sec. 7, relating to the construction of State highways in the forest preserve.

Amending Art. VII, Section 8, relating to the sale or lease of a certain portion of the Erie canal.

Amending the constitution by adding Art. VIIa, relating to the assessment of real property.

North Carolina.—To be submitted in November, 1918:

Amending Art. V, Sec. 3, exempting homestead notes and mortgages from taxation under certain conditions.

Amending Art. IX, Sec. 3, increasing the school term from four to six months.

A proposal of the Legislature for the calling of a constitutional convention will be submitted at the same election.

North Dakota.—To be submitted in November, 1918:

Amending the constitution authorizing the legislature to establish a state system of hail insurance.

Amending the constitution requiring the concurrence of four or five judges of the Supreme Court in any decision declaring the legislative enactments of the State unconstitutional.

Passed by the Legislature of 1917, to be submitted in 1919, amending Art. V, Sec. 121, extending the suffrage to women.

Amending Art. VII, Sec. 135, relating to the voting privileges of members of co-operative corporations.

Amending Art. VIII, Sec. 162, relating to the investment of school funds.

Amending Art. II, Sec. 177, relating to the taxation of improvements on land.

Amending Art. XIX, Sec. 215, changing the name of the State Reform School to that of State Training School.

Ohio.—Submitted Nov. 6:

Amending Art. XV, Sec. 9, prohibiting the sale and manufacture of intoxicating liquors. Rejected, 522,590 for, 523,727 against.

To be submitted in November, 1918:

Amending Art. XII, Sec. 2, providing against double taxation of real estate.

Oregon.—Submitted June 4:

Amending Art. I, Sec. 1, declaring against implied repeal of provisions of the constitution by conflicting amendments thereto. Rejected, 37,187 for, 72,445 against.

Amending Art. I, Sec. 32, and Art. IX, Sec. 1, providing for the classification of property for purposes of taxation. Adopted, 62,118 for, 53,245 against.

Amending Art. II by adding Sec. 14a, requiring the election of city, town and state officers at the same time. Adopted, 83,630 for, 42,296 against.

Amending Art. IV, Sec. 18, limiting the number of bills which may be introduced by, and increasing the pay of, members of the legislature. Rejected, 22,276 for, 103,238 against.

Amending Art. II, Sec. 9, authorizing ports to incur limited indebtedness to encourage water transportation. Adopted, 67,445 for, 54,864 against.

To be submitted in November, 1918:

Amending Art. XIV, establishing and maintaining Southern and Eastern Oregon Normal Schools.

Pennsylvania.—To be submitted in November, 1918:

Amending Art. IX, Sec. 4, authorizing the state to issue bonds to the amount of $50,000,000, for the improvement of highways.

Amending Art. IX, Sec. 8, relating to the debt limits of municipalities and the borrowing capacity of the city of Philadelphia.

Passed by the legislature of 1917,

to be submitted to the legislature of 1919:

Amending Art. IX, Sec. 8, relating to the debt limits of municipalities and the borrowing capacity of the city of Philadelphia.

Amending the constitution empowering the legislature to provide for the incorporation of banks and trust companies and to prescribe the powers thereof.

Amending the constitution, regulating the payment of moneys from the state treasury.

Amending the constitution, providing for the exemption from taxation of certain classes of property.

South Carolina.—Of the seven amendments approved by the people in November, 1916 (*A. Y. B.*, 1916, p. 207), the legislature adopted the three following:

Amending Art. VIII, Sec. 7, relating to the bonded indebtedness of the city of Anderson.

Amending Art. X, Sec. 5, relating to the bonded indebtedness of the Charleston school district.

Amending Art. X by adding Sec. 18, authorizing the municipalities of Clinton and Easley to assess the abutting property for permanent improvements.

To be submitted in November, 1918:

Amending Art. VIII, Sec. 7, relating to the bonded indebtedness of the City of Abbeville.

Amending Art. X, by adding Sec. 149, authorizing the city of Charleston to assess abutting property for permanent improvements.

Amending Art. XI, Sec. 5, exempting Greenville county from the limitations imposed by this section.

South Dakota.—To be submitted in November, 1918:

Amending Art. V, Sec. 1, authorizing the Supreme Court to designate other persons to serve on the Supreme Court bench in place of judges disqualified from sitting in any particular cause.

Amending Art. VII, Sec. 1, extending the suffrage to women.

Amending Art. VIII, Sec. 5, prescribing conditions for the disposal of State lands.

Amending Art. XI, Sec. 2, empowering the legislature to classify property for purposes of taxation, and authorizing the taxing of intangible property and of incomes.

Amending Art. XIII, Sec. 1, authorizing the State, counties and municipalities to give their credit to or invest their funds in the stock of corporations organized for the development of natural resources when approved by a majority of qualified electors.

Amending Art. XIII by adding Sec. 10, empowering the state to acquire plants for the development and distribution of electric power.

Amending Art. XIII by adding Sec. 10, empowering the state to engage in the manufacture of cement and cement products.

Amending Art. XXI, Sec. 2, prescribing the salaries of state officers.

Amending Art. XXI by adding Sec. 8, empowering the legislature of the State to provide a fund for hail insurance by the taxation of agricultural lands.

Tennessee.—Proposal of the legislature for the calling of a constitutional Convention submitted on July 28, was defeated.

Texas.—Submitted August 21:

Amending Art. XVI, by adding Sec. 59, providing for the conservation of natural resources and the creation of conservation districts. Adopted,[1] 43,571 for, 31,310 against.

To be submitted in November, 1918:

Amending Art. I, Sec. 10, relating to the rights of accused persons in criminal prosecutions.

Amending Art. VII, Sec. 3, providing funds for the maintenance of the public schools and for the supply of free textbooks to pupils.

Amending Art. XVI, Sec. 59, relating to the conservation of natural resources.

Utah.—To be submitted in November, 1918.

Amending Art. III, Sec. 4, relating to the taxation of mines and mining property.

Amending Art. XIII, Sec. 3, relating to uniformity of taxation, and exemption therefrom.

Amending Art. XXII by adding

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[1] Incomplete, some counties not included.

Sec. 3, prohibiting the manufacture, importation and sale of intoxicating liquors after Jan. 1, 1919.

Washington.—A proposal of the legislature for the calling of the constitutional convention will be submitted in November, 1918.

Wyoming.—To be submitted in November, 1918:

Amending Art. XIX, Sec. 1, prohibiting the manufacture, importation and sale of intoxicating liquors, after Jan. 1, 1920.

Amending Art. XV, Sec. 15, authorizing the levy of a special tax on live stock for the purpose of stock protection, inspection and indemnity.

Amending Art. V, Sec. 6, authorizing the calling of a district judge to the Supreme Court bench in case of inability of a justice of the Supreme Court to sit in any cause.

COUNTY GOVERNMENT

CLINTON ROGERS WOODRUFF

County Government Committee of the National Municipal League.—A conference of the Committee was held at Detroit in November, attended by committeemen and members of the League interested in the subject. It was brought out that considerable intensive study has been done in Delaware county, Pa., Westchester county, N. Y., Cumberland county, Md., and Frederick county, Va. Otho G. Cartwright of Westchester was chosen chairman. A statement outlining the situation as it existed in most of the counties of the country and suggesting a constructive programme for the relief of present conditions has been prepared. The committee finds itself in agreement on the following general principles and facts:

County government is the most backward of all our political units, the most neglected by the public, the most boss-ridden, the least efficiently organized, the most corrupt and incompetent and, by reason of constitutional complication, the most difficult to reform.

Any successful attack upon the problem should follow the same strategy that has been so successful in recent years in municipal affairs. The effort should be not to invent additional legal checks and safeguards and other mechanical devices of the law but to clear up the mazes of county politics, straighten the lines of control, simplify the organization and make the powers in the county court house more vulnerable to the impact of public opinion.

The principle of electing all of the county officers is vicious and undemocratic. The long ballot dismembers the county government, makes it a weak chain of isolated offices, facilitates evasion of responsibility, and makes it an elusive and difficult organism for the people to control.

Counties which contain a large city should, where possible, dis-annex the rural portion, and the city government should become a county government also, the duties of county officers being distributed appropriately among existing municipal officials or new appointees, *e.g.*, Denver, Baltimore, and the cities of England. The Denver arrangement is regarded as a satisfactory model.

The county officers who enforce state laws, namely sheriff, and attorney, should be maintained and appointed by the state, as in the U. S. Government with its Federal Marshals and U. S. Attorneys under the Attorney General. This would prevent local nullification of state laws and would cast upon the state which made the law the burden of facing any public hostility thereto.

The Board of Commissioners (Supervisors) should be made the real head of the county, with full control over all remaining county officers, in order that upon this Board may be placed unescapable responsibility for the entire county government.

For enforcing its desires the Board should be equipped with an adequate agency in the shape of a County Manager appointive by the board and holding office at its pleasure, he in turn appointing all subordinate officers and preparing the annual budget.

Upon county governments as thus organized and developed into efficient, coherent, democratic institutions, it would be possible and desirable to confer many of the functions now performed on a scale too small for efficiency by townships and villages, such as police, health, schools, roads, tax collections and assessment, public libraries, and relief of the poor.

The committee recognizes that in most states, county government is inextricably entangled in the state constitution and can hardly be reconstructed as above except by a constitutional convention.

As an immediate programme the committee advocates:

(1) Optional laws permitting any county to create the office of county manager as above and conferring upon the manager as much appointive and administrative power (subject to the commissioners) as the state constitution may permit.

(2) In states where public advertising is a political factor, the committee advocates an optional law permitting any county to issue a *County Gazette* wherein all legal advertising, court notices, calls for bids, tax sales, etc., will appear.

(3) The system of paying county officers by fees has its advantages where the work of the office is so slight and irregular as to command only part of the officer's time, but where the officer's whole time is demanded, or where the fees exceed a reasonable compensation, the fees should be turned into the treasurer and the officer paid by salary.

The principle of "Home Rule" for counties is embodied in the optional law referred to in the programme for immediate relief. A similar provision might be embodied in the final charter after necessary constitutional amendments are obtained.

Reports.—Among the more important reports dealing with county government issued during the year are: *City and County Administration in Springfield, Illinois*, by D. O. Decker and Shelby M. Harrison (New York, Russell Sage Foundation); *Proceedings of the Second Conference for Better County Government in New York State*, Otho G. Cartwright, secretary, White Plains, N. Y.; *Suggested Course for County Training Schools*, Trustees of the John F. Slater Fund; *County Government in Texas*, by Herman G. James, University of Texas; *City and County Consolidation for Los Angeles*, prepared by the Taxpayers' Association of California; *A County System for Connecticut*, by Albert McClelland Mathewson, New Haven; *County Salaries*, by the Westchester County Research Bureau, White Plains, N. Y.

VI. MUNICIPAL GOVERNMENT

Clinton Rogers Woodruff

CHARTERS

Alameda.—The new charter of Alameda, Cal., is one of the briefest thus far written. One of its significant features is that the grant of general powers to the city is expressed in a single paragraph without enumeration or specification. It provides for the city-manager form of government, but contains two provisions which are, so far as is known, without precedent in the United States. One of these, relating to "publicity of candidates," is designed to provide a means whereby the electors may ascertain from a reliable source something of the comparative qualifications of the different candidates. The other is a provision relating to the recall, whereby the petition for recall is so arranged as to enable the voters to sign for or against the recall. It provides also that the proponents of the recall must secure not only the required percentage of signatures, but more signatures than those opposed to the proposition, otherwise no special election will be called.

Milwaukee.—A bill submitting to a referendum at the spring election, 1918, the question of reducing the size of the Milwaukee Common Council was passed by the Wisconsin legislature of 1917. Under its provisions the voters are to choose between the following propositions, the two receiving the highest number of votes at the primary to be voted upon at the final election:

1. A council of 37 members as now constituted, namely, 35 ward aldermen serving two years, and 12 aldermen-at-large, six elected every two years for four-year terms.
2. Thirty-seven aldermen as at present, but all serving for four years.
3. Eighteen members, 12 elected from as many districts and serving for four years each, and six aldermen-at-large, three elected every two years.
4. A council of 18 members elected from as many districts, one-half to be elected every two years for four-year terms.
5. The council to consist of nine aldermen elected from the city at large and serving six-year terms, three to be elected every two years.
6. Twenty-five aldermen elected from wards for four years each.

Commission Government. — There has been some development of interest in the commission form of government in those cities which cannot as yet secure a city-manager form or which do not believe that the community is ready for it. The following is a list of the cities which have adopted commission government since the list published in the Year Book for 1916 (p. 209):

	Population, 1910
Jamestown, N. Y.	31,297
Newark, N. J.	347,469
Butler, Pa.	20,728
Charlotte, N. C.	34,014
Jacksonville, Fla.	57,699
South Charleston, Ohio	1,181
Xenia, Ohio	8,706
Buda, Ill.	887
Champaign, Ill.	12,421
Dallas City, Ill.	1,288
Earlville, Ill.	1,059
Jerseyville, Ill.	4,113
Royal Oak, Mich.	1,071
Port Washington, Wis.	3,792
Herington, Kan.	3,273
Kearney, Neb.	6,002
Maplewood, Mo.	4,976
Dewey, Okla.	1,344
Madill, Okla.	1,564
Stillwater, Okla.	3,444
Clarendon, Tex.	1,946

The law under which commission government was established in Jacksonville, Fla., which for years has had a peculiar form of government, abolished the Boards of Bond Trustees and Port Commissioners. Under the law a City Council was elected on June 19, which, as soon after its organization as practicable, elected the first set of commissioners. After the expiration of their terms, the qualified electors of the city at general elections will elect the commissioners for terms of four years each. The new law abolishes in June, 1919, the office of mayor; after that date the chairman of the city commission will be the mayor *ex-officio*, and will exercise the duties and powers now prescribed for the mayor. Under the new charter the commission is vested with all executive duties of city government, with the one restriction that the City Council must confirm appointments and certain other specified actions. The law increases the size of that body, after the terms of the present councilmen expire, to 18 members, one from each of 11 wards and seven to be elected at large. The city recorder, city treasurer and municipal judge are not affected by the new charter, but all other officers are under the supervision of the commission.

Commission government in Springfield, Ill., notwithstanding criticisms of departmental procedures, is approved and commended in the Sage Foundation report on "City and County Government." A change in the election plan so that each commissioner may be chosen for a specific set of duties, however, is considered to be vastly important. Under the present arrangement the mayor only

is chosen for specific tasks, as the allotment of commissionerships is made after the commissioners are elected. Thus a commissioner exceptionally qualified to have charge of finances may be assigned to work for which he is not at all fitted. For example, there is little doubt but that most of the votes cast for certain Springfield commissioners who have been up for reëlection after making good records in particular departments were cast to put these men back at their old work; yet under the present arrangement there was no assurance that the candidate, if elected, would be assigned to the old duties for which he had demonstrated his qualifications.

The report urges voting for commissioners for definite kinds of work. Every vote could then mean a vote for or against a given policy in that office.

The City-Manager Plan.—The following states in 1917 enacted legislation enabling the cities within them to adopt a city-manager form of government: Idaho, Kansas, Montana, Nebraska, North Carolina and South Dakota. Under these enabling acts charter committees are at work in several cities.

The following is a list of the cities adopting the city-manager plan since the list published in the YEAR BOOK for 1916 (p. 209), with the names of the city managers so far as their appointments have been announced.

	Manager	Population, 1910
Auburn, Me.		15,064
Petersburg, Va.		24,127
Goldsboro, N. C.	E. A. Beck	6,147
High Point, N. C.	Archer Lyon	9,525
Tarboro, N. C.	J. H. Jacocks	4,129
Kingsport, Tenn.	Wm. H. Pouder	....
Pipestone, Minn.	F. E. Cogswell	2,475
Alta, Iowa	F. N. Sipe	959
Anamosa, Iowa		2,983
Manchester, Iowa	T. Wilson	1,758
Sac City, Iowa	A. E. Holmes	2,201
Hot Springs, Ark.	C. W. Weaver	14,434
Carrington, N. D.	F. J. Beier	1,217
Willow Lakes, S. D.	L. F. Reynolds	437
Cambridge City, Ind.	H. E. Stannan	2,237
Eldorado, Kan.	B. C. Wells	3,129
Wichita, Kan.	L. R. Ash	52,540
Mangum, Okla.	W. F. Hearne	3,667
Ballinger, Tex.		3,536
Yoakum, Tex.	W. Lander	4,667
Albuquerque, N. M.		11,020
Huntington Beach, Cal.	G. W. Spencer	815
Marysville, Cal.		5,430

Until recently discussion of the principles involved in the city-manager plan of government had been confined to the smaller cities, but now it is being seriously considered in some of the largest cities of the country, among them New York, Chicago and Cleveland. In New York, at the beginning of Mayor Mitchel's administration, a charter committee was appointed by the Board of Estimate and Apportionment. Various causes contributed in the practical dissolution of this committee, but Henry Bruere, one of its members, prepared a "Plan of Organization for New York City," so that the mayor might "call the recommendations it contains to the attention of any subsequent charter committee." Mr. Bruere submitted two general plans, which contained certain elements common to both, *viz.*, (1) a "policy guiding" mayor, (2) a directing board (estimate and apportionment), (3) a finance department controlling revenues, funds and disbursements, and (4) a city manager. The proposed reorganization was primarily directed toward "definitizing responsibility and providing more effective administrative machinery." The details of the appointment and consequent responsibility of the city manager, whether to the board or the mayor, was left for future consideration. The manager was to have no responsibility for policies except as a requested adviser of the board. He was to have nothing to do under either plan with the police department or with the civil-service or law departments. The chief distinction between the two plans was the number of the other departments to be brought under the administration of the manager. The present Board of Aldermen was given a place under both plans for reasons "largely sentimental," but it was suggested that several obvious advantages might be gained by reducing the number of aldermen on the Board. The most radical change suggested in the report involved the assumption by the Board of Estimate and Apportionment of more complete responsibility for the effective management of the city.

In Chicago the proposition has been put forward by the Chicago Bureau of Public Efficiency in the form of a bill for the reorganization of the municipal government, "the main purpose of which is to apply to Chicago a modified form of the city-manager plan of government, with non-partisan methods of electing aldermen." The bill also reduces the number of aldermen from 70 to 35, one alderman from each ward, and extends the term of aldermen to four years, subject to popular recall. In form the bill is an amendment to Article XII of the Cities and Villages Act, which article is the portion of the city charter based upon the so-called Chicago-charter amendment to the Illinois constitution, adopted in 1904. The term city manager is not used in the bill. The title of mayor is retained for the executive head of the city government, but the bill aims to give the essence of the city-manager plan, which is the vesting of responsibility for administration in an executive chosen by the council and subject to its continuous control. The Bureau of Public Efficiency explains and advocates the plan in a report on "Unification of Local Governments in Chicago," issued in January, which also urges the merger into one municipal entity of all the local governments within the area comprising what might be termed "metropolitan Chicago," substantially the territory within the limits of the Sanitary District. Complete unification, of course, cannot be effected, without extensive modification of the constitution of the state. The General Assembly of Illinois at its 1917 session voted to submit to the people in November, 1918, the question of calling a convention to revise the constitution.

In Cleveland a committee of 15 members was appointed to inquire into the feasibility of a city-manager plan for the city. It held numerous meetings, heard much testimony *pro* and *con*, and concluded that "in Springfield and Dayton the city-manager government is giving the people a businesslike and economical administration, and that the overwhelming sentiment of the citizens is in favor of it." The committee adjourned without making any recommendations with regard to Cleveland but it will be reassembled at a later date.

An interesting "Graphic Argument for City Manager Government" has been prepared by LeRoy Hodges, primarily for Petersburg, Va., where it was influential in securing the adoption of the form by that city; but it is of general interest to all who advocate this form. Another interesting document is a report on "Selecting a City Manager for Goldsboro, N. C.," which appeared in the *National Municipal Review* for September.

County and Town Managers.—The proposed charter for San Diego County, California, defeated on Feb. 27, was an interesting document, and the support it received marks a turning point in the reform of county government. The charter was especially noteworthy in its acceptance of the county-manager idea, and in the extent to which it recognized the merit principle in civil service and the spirit which underlies modern public-welfare work. Framed under the home-rule provisions of the California constitution, it provided among other things for an enlarged Board of Supervisors, one each from nine districts (five from San Diego and its suburbs and the remainder from the outlying districts), these supervisors to be elected at large for overlapping terms. The Board was to have only legislative powers and the members were not to be compensated for their services beyond the amount of their actual expenses incurred in pursuance of their duties. The county manager was to be chosen by the supervisors from a list submitted by the civil-service commission. He was to be the actual manager of affairs, as well as purchasing agent, road commissioner and surveyor. Under these limitations it is obvious that the county manager would have to be a trained engineer. The appointing power of the manager would not have been large, since all of the principal county officers, with the exception of the civil-service commission, the board of public welfare, the sheriff and the district attorney, would have been appointed by the Board of Supervisors.

A plan for town and community organization together with a town-manager charter have been prepared and published by a special committee of Walpole, Mass., of which Charles S. Bird, Jr., is chairman.

Home Rule.—Municipal home rule received scant consideration at the hands of the legislatures of 1917. No measure directly granting or extending home rule to municipalities was enacted. What is known as the Brown Home-Rule Amendment was passed by the New York legislature through its preliminary stages, but it was not regarded as satisfactory by the advocates of real home rule. The committee on municipal affairs of the Massachusetts Constitutional Convention reported adversely on a municipal home-rule proposal, but there has been no final decision of this or any other provision relating to cities (see also V, *Popular Government and Current Politics*). In connection with this Constitutional Convention a series of pamphlets dealing with municipal home rule, commission government in American cities, the city-manager plan, and constitutional restrictions on municipal indebtedness were prepared by a commission, appointed to compile information and data for the Convention, of which Professor William Bennett Munro of Harvard was the chairman.

Home rule in Chicago suffered a severe blow in a decision of the Illinois Supreme Court holding that the state Public Utility Commission, and not the City Council had the power to regulate utilities operating within the boundaries of the municipality. Questions of rates, quality of service, etc., are thus taken out of the hands of the city's local government. This creates an anomalous situation. The city can grant franchises, but regulation of service is within the exclusive authority of a state body appointed by the governor. It may be doubted whether the legislature intended to rob Chicago of this amount of home rule when it passed the act creating a state Utility Commission. Chicago may be able to secure an amendment to the Utilities Act restoring home rule. The City Council is committed to home rule and will work and fight hard to recover it.

EFFICIENCY, RESEARCH, BUDGETS, AND ACCOUNTING

Standardization of Services and Salaries.—A report of the Bureau of Standards of the Board of Estimate and Apportionment of New York City, published in 1917, represents four years of intensive study of the most extensive municipal service in America, and embodies a comprehensive plan for the standardization of conditions of employment in that service. Standard specifications for personal service, aiming to furnish a simple and logical classification of all employments, are given, with general descriptions of duties, appropriate titles and rates of compensation, and conditions governing initial appointment, advancement and promotion, as a basis for appropriations and current fiscal and civil-service control and for the information of present and prospective employees and the public. The proposed plan is a bold effort to apply to an enormously large service a set of minutely detailed specifications governing the selection, compensation and promotion of employees. An introductory statement contains an excellent discussion of the basic principles and the methods of standardizing personal service.

In the 1917 budget, the employees of Dayton, Ohio, were allowed an increase in salaries of about $25,000 over 1916. The increases were made in recognition of the increased cost of living, in accordance with the salary standardization of the civil-service board, and in recognition of greater responsibility of some officials and their better acquaintance with their work, due to three years' successful experience under the commission-manager form of government. Reports from other cities in Ohio, notably Toledo and Akron, indicate that several cities were forced to reduce both the salaries and the number of employees. Dayton's ability to proceed with its usual activities and still make merited salary increases resulted from the increased revenues arising from a business-like management of municipal undertakings.

Municipal Budgets.—Each year sees the acceptance of a recognized budget plan by more cities. With but one or two exceptions, the segregated or itemized budget has been the only one used. During the year, however, several notable departures from the customary itemization have been made, and in Philadelphia and Detroit newly established budget procedure provides for an allotment plan in appropriating for the year's needs. Boston, on the other hand, having adopted a segregated form of budget in 1916 (*A. Y. B.*, 1916, p. 212), decided after a year's trial to continue the system for 1917-18.

In Philadelphia the committee on charter revision recommended to the legislature a requirement for the annual submission to the Councils of a coördinated budget to be prepared by the mayor. The bill adopted a pay-as-you-go policy of raising sufficient revenues, from taxation and other sources, to meet all expenses for the year, including capital outlays. The surplus of one year was not to be used to offset the deficit of a later year, while a deficit in any year was to become a first lien on the revenues of the succeeding year. Public meetings were stipulated. Appropriations were to be made by departments, thus leaving with the departmental heads the responsibility for spending money for all "other than personal services," and materially reducing the number of appropriation accounts required. Because of factional differences, however, the measure did not become law.

Detroit, through the efforts of the Bureau of Governmental Research in coöperation with the city controller, prepared a modern budget for 1917-18. Appropriations are made for each activity separately, in order that the relative importance of each may be measured and services increased or decreased. The head of each department will be given a sum of money and will be permitted to get the best possible results. The new procedure is a great improvement over the unintelligible mass of data presented in previous years, and its value has already been proved by the substantial reductions which the Board of Estimates has been able to make notwithstanding increased costs of labor and materials and the growing population and area of the city. The installation of the new system was made possible by the abolition of the old, large Board of Estimates and the substitution of a board consisting of the mayor, controller, corporation counsel, city clerk and treasurer. A uniform classification of accounts, based on character of goods purchased, was also introduced. Transfers between appropriations and funds are largely eliminated.

San Francisco also has adopted a revised budget procedure. A report of the New York Bureau of Municipal Research pointed out that savings of nearly $1,000,000 a year were possible under improved conditions. To put the findings into effect, a Bureau of Governmental Research was established in January. An executive budget was recommended, departments making their estimates according to a new uniform classification of accounts. On the ground that lump-sum estimates cover up leaks, segregated estimates were required, the example of New York, Chicago, Springfield, Mass., and other cities being followed in this respect.

Under the guidance of capable city managers,[*] Jackson and Grand Rapids, Mich., and San José, Cal., have adopted modern budgets. Those of the two Michigan cities are segregated budgets, and the classification of expenditures adopted is by nature of the object purchased rather than its use. The city manager of San José followed the procedure established by a new charter adopted on July 1, 1916. One item of note in this budget, which has a total of $341,000, is that of $18,000 set up as a "reserve for contingencies."

Two important reports dealing with the question of a budgetary plan for the Sanitary District of Chicago have been prepared by J. L. Jacobs & Co., Chicago. One is on "A Definite Budget Plan," and the other deals with "Budgetary Codes," including a departmental code, classification of budgetary expenditure accounts, alphabetical fund list for commodities, services, etc., and a classification of budgetary revenue accounts.

Because of its great population and wealth, the range of its activities and the elaboration of its records, New York serves as a prototype for American cities. No other city in the country has arranged to secure so much clear information about its budget and expenditures. The 1917 budget of $211,000,000 has been exhaustively analyzed for the average citizen, both by Comptroller Wm. A. Prendergast ("Extension of Municipal Activities and its Effect on Municipal Expenditures," February, 1917), and by Dr. F. A. Cleveland of the Bureau of Municipal Research, the former including a comparative study for the past 15 years. Objection to the present procedure is made in Dr. Cleveland's analysis on the ground that no one executive elected by the people can be held responsible for expenditures, the budget being merely an appropriation ordinance. Recommendations are offered to make the budget a complete fiscal plan for the year, to be prepared with accurate facts to support it, and to follow a regular calendar from its preparation by departments to its passage by the aldermanic body, placing upon the mayor responsibility for the entire financial plan for the year. A number of interesting conclusions are presented, for instance, that actual appropriations do not keep pace with the normal annual increase in the community's demands. An elaborate review of budget procedure by C. E. Rightor is to be found in the *National Municipal Review* for November, 1917.

Municipal Accounting.—Centralized accounting, providing for the coördination of all accounting and auditing in one department, is a prime requisite of a sound municipal accounting system. This is accomplished in many cities, Akron, Oakland, Milwaukee and Toronto having fallen in line recently. In Akron centralized accounting includes the central collection of revenues. Another improvement in Akron is the adoption of mechanical methods in keeping all possible records, through the introduction of special tabulating machines, typewriter forms, etc. Toronto also has introduced the use of accounting machines for work in some of its departments, and Milwaukee is contemplating the use of tabulating machines for cost-accounting purposes. Expense ledgers, to afford a basis for budget requests, have been introduced in Springfield, Ill., Oakland and Akron, and are under way in Dayton, Detroit and other cities, designed to facilitate the compilation of unit costs in connection with every operation or function which may be so measured. Numerous other features promoting central financial control and effective administration, such as centralized payrolls, centralized purchasing, unit-cost records, monthly departmental reports, uniform classification of receipts and expenditures, established fund accounting, and maintenance of subsidiary ledgers and records are too numerous to attempt individual mention. Oakland is in the front rank of cities enjoying complete financial systems because of the work of a firm of public accountants employed by the city. Public accountants are manifesting a greater interest than ever before in obtaining government installations and audits.

A study of cities adopting a budgetary procedure for the first time discloses the unfortunate absence of any central clearing house to suggest uniformity in classifications and definitions. Each city casts about for a satisfactory classification in use elsewhere or attempts a home-grown one. The resulting diversity is discouraging to those cities which are seeking a generally accepted standard, as well as to those desiring to avail themselves of comparative statistics. One of the most carefully prepared and thoroughly tested classifications is that of objects of expenditure used by Rochester, N. Y. It is based upon the proposals of the Federal Commission on Economy and Efficiency, which experience of over a year has enabled it to strengthen as necessary for adoption by a city. Another classification meeting with success in actual operation, in the opinion of C. E. Rightor, *supra*, is that in use in Dayton, St. Augustine, Fla., and Jackson, Mich., which has just been adopted by Detroit and Grand Rapids. In this classification the nature of the object is the determining factor, and it differs materially from the old classifications in which use of the object is the basis.

A new edition of the Philadelphia *Manual of Accounting, Reporting and Business Procedure*, originally published on Dec. 29, 1913, has been published. While the text of the first edition has been completely revised, no changes have been made in the fundamental accounting principles. This edition contains illustrations of the various forms considered essential to the successful operation of the system, which were formerly contained in a separate volume.

County and Town Budgets.—In Minneapolis the city and county recently completed the installation of the allocated system of budget, similar to that installed in Rochester, N. Y. Milwaukee County adopted for the first time a segregated budget amounting to $3,741,000, prepared under the direction of the county auditor in accordance with a new law providing for the budget. In Philadelphia, in the advanced steps described above, the entire budget procedure was to have been prepared with consideration of the fact that the city and county of Philadelphia are one and the same, thus simplifying the problem of financing and control.

Towns have been particularly slack in their fiscal systems, and a report of the New Hampshire Tax Commission (E. C. Mabie, "Budget-Making for New Hampshire Towns," Concord, 1917), recommending a procedure for making and presenting budget estimates of revenues and expenditures in conformity with a uniform system of town accounts, greatly clarifies a situation needing serious attention. It points out the shortcomings of present incomplete methods of making up town budgets, explains how a town budget should be made up, and provides a standard blank form for presenting estimates in an intelligent way to citizens before and at the town meeting. The report recognizes the value of the balance sheet, cash statement, detailed estimates, public hearings and a tentative budget as aids to efficient budget making, and recommends the appointment in each town of a committee on finance made up of citizens who should serve for a number of years in order to ensure the carrying out of a planned programme. The prevailing procedure in Maine towns also has been studied (O. C. Hormell, "Budget-Making for Maine Towns," Bowdoin College, 1916), and a complete statement of the essential steps in budget-making was found necessary for their guidance.

State Supervision of Local Finances.—Not all progress in accounting and financial methods in cities is due to the cities themselves. State legislatures have never shown a greater interest in local financial systems than in recent months. From New Hampshire (see *supra*) and New Jersey ("Report of the Committee for Survey of Municipal Financing," New Jersey, 1916), to California many states have given consideration to the growing problem in towns and cities of providing new services and improvements without raising sufficient revenue to pay for them. Iowa and Minnesota have found, as have all states making a detailed investigation, that very few of the local units have ever introduced an acceptable budget procedure of financial control. The unsatisfactory conditions found in Minnesota are stated to apply also to the state, and it is pointed out that there is not even a law compelling the establishment of a scientific sinking fund except in first-class cities. North Carolina and Nebraska are among the states which passed at the 1917 sessions of their legislature bills providing for a uniform system of accounting in cities. The former provides also for restrictions in taxation and contracting of debts.

The lack of control by cities generally over incurrence of liabilities and of checks on expenditures, found in these many investigations, is proved by the report of the U. S. Bureau of the Census for 1916, which finds that of 213 cities over 30,000 in population, 149 exceed their revenues in expenditures, including capital outlay and debt requirements. New York, Ohio, Pennsylvania and Iowa have established permanent bureaus to compile general financial statistics of cities and towns and to have supervision over their methods of accounting and record keeping. The reports of these bureaus are illuminating and their efforts are proving salutary.

Municipal Financial Legislation in New Jersey.—The New Jersey legislature has passed a series of laws regulating the management of municipal finances which make possible a marked advance in the financial administration of the cities of that state. The legislature of 1916 passed a law regulating the management of debts, and the legislature of 1917 added to this several statutes regulating floating debts, the payment of permanent debt, and the form and procedure of budget-making and accounting, and established a state Department of Municipal Accounts. The legislation of 1916 limited the term of bonds to the life of the improvement, prohibited refunding of bonds, specified the purposes for which debts may be incurred, required the use of installment bonds, set a limit beyond which debts may not go, governed the method of selling bonds, and prescribed the method of raising money in anticipation of tax revenues and in cases of emergency. Net debts may not exceed seven per cent. of the assessed value average for the three preceding years, with certain special exceptions which might raise the limit to nine per cent. Net debt is defined in the law in detailed form, the method for computing the legally permissible debt being roughly as follows: The gross debt is calculated by adding the bonded debt, special assessment issues, and utility, schools, parks and other obligations. From the sum of these classes of debt to find the net debt the following are deducted: special assessments levied and uncollected; special assessments to be collected and applied to present debt; debt not over three per cent. of the assessed valuation where this debt has been incurred for utilities which are paying the interest and redeeming the principal from current revenues; debts incurred for water-supply systems; funds and sinking funds; taxes levied for the retirement of the debt; unpaid taxes for the last three years; debts incurred for protection from the seas; and amounts otherwise due the city. This definition, in the opinion of Prof. Ralph E. George, who reviewed the legislation in the *National Municipal Review*, would seem to be more elastic and at the same time more easily understood and applied than the regulations now used in many states.

Cities may borrow up to 95 per cent. of the taxes voted in the budget; in case these taxes are not paid promptly, tax-revenue notes can be issued to the amount of delinquent taxes. The legislature permitted a choice by the city between the department and the segregated budget, on the ground that the former where feasible allowed greater administrative efficiency. The object sought is to have the definite programme of administration clearly set forth, both as to sources of revenue and purposes of expenditure. An interesting part of this law is the provision of a surplus-revenue account, which can be used for financing purposes, thus avoiding the periodical loans needed by so many cities before taxes are paid. To this account must be carried all unexpended balances. If there develops any shortage in the municipal receipts, the city can borrow from this account, but no appropriation can be made from it after the budget has been adopted.

The enforcement of these laws is largely secured through the establishment of a state Department of Municipal Accounts. A commissioner of municipal accounts is to be appointed by the state treasurer, to receive a salary of $3,600 per annum. While he is given power to require the adoption of uniform accounting and reporting and to enforce all state laws dealing with local finances, his main duties are concerned with the enforcement of debt legislation. He is given power to determine the adequacy of the municipal sinking funds and to require the levy of additional taxes to make good any deficiency in these funds.

CITY PLANNING

City-Planning Progress.—The following is a list of the municipalities in the United States in which city-planning commissions are now at work:

Massachusetts.—Adams, Amherst, Arlington, Attleboro, Beverly, Boston, Brockton, Brookline (town), Cambridge, Chelsea, Chicopee, Clinton (town), Everett, Fitchburg, Framingham (town), Gardner, Gloucester, Haverhill, Holyoke, Hudson (town), Lawrence, Leominster, Lowell, Malden, Marlboro, Medford, Melrose, Methuen, Natick, Newburyport, Newton, Northampton, Norwood, Plymouth (town), Pittsfield, Quincy, Revere, Salem, Somerville, Southbridge, Springfield, Stoneham, Taunton, Wakefield (town), Waltham, Watertown (town), Wellesley (town), Westfield (town), Weymouth (town), Winthrop (town), Winchester (town), Worcester (town), Woburn (town), Walpole (town).

Rhode Island.—Providence.

Connecticut.—Bloomfield, Bridgeport, Hartford, New Britain, New Haven, New London, West Hartford.

New York.—Binghamton, Mt. Vernon, New York City, Rochester, Rome, Rye (village), Syracuse, Troy, White Plains (Westchester County).

New Jersey.—Belleville, Caldwell, Camden, East Orange, Irvington, Trenton.

Pennsylvania.—Allentown, Altoona, Chester, Easton, Erie, Franklin, Harrisburg, Hazleton, Johnstown, Meadville, Newcastle, Oil City, Philadelphia, Pittsburgh, Pittstown, Pottsville, Reading, Scranton, Wilkes-Barre, York.

Maryland.—Baltimore, Cumberland.

Ohio.—Akron, Cleveland, Dayton, Mansfield, Toledo.

Illinois.—Chicago, Elgin, Springfield.

Michigan.—Detroit.

Minnesota.—St. Paul.

Missouri.—St. Louis.

Kansas.—Kansas City.

Nebraska.—Lincoln, Omaha.

North Dakota.—Fargo.

Iowa.—Des Moines.

Colorado.—Colorado Springs.

Kentucky.—Louisville, Paducah.

Florida.—St. Augustine.

Louisiana.—Shreveport.

California.—Alameda, Berkeley, Fresno, Martinez, Modesto, Palo Alto, Sacramento, San Anselmo, San José, San Rafael, Santa Monica, Turlock.

Well defined city-planning movements are on foot in the following cities: Sacramento, Cal.; Walpole, Mass.; Kingsport, Tenn.; Ojibway, Ont.; West Duluth, Minn.; Kistler, Pa.; Bridgeport, Conn.; Langeloth, Pa.; Camden, N. J.; Ottawa, Canada; Westchester County, N. Y.; Akron, Ohio; and Allwood, N. J.

An incident of the Kansas City meeting of the National Conference on city planning (see *infra*) was the presentation of a report on "City Planning Progress," prepared by the Committee on Town Planning of the American Institute of Architects (George B. Ford, New York, chairman). This book is arranged in community references in alphabetical order, and covers 233 cities and towns in the United States of which there is recorded actual city planning. There are hundreds of illustrations applying to the plans and the progress which the volume sets forth. To quote the *National Municipal Review:*

> The notable difference in this volume from any similar volume is that there is not a single illustration of a German city or one single glorification of foreign city planning in the whole book. It might have been properly entitled "American City Planning Progress," which, as the volume shows, is now a

very definite and positive thing, going on with vigor the country over.

City-Planning Reports.—During the year six comprehensive and elaborate city-plan reports, a dozen or more partial reports devoted to special subjects, and the usual annual reports of city-planning commissions have been published. The six first named are for the cities of East Boston, Bridgeport, Conn., Evanston and Elgin, Ill., Milwaukee, and Sacramento.

The East Boston report, prepared by George Gibbs, Jr., is in two parts. The first gives the results of the survey, recording those peculiarities of location, history and evident requirements which the plan must meet and attempt to satisfy. The second contains the recommendations for immediate specific improvements and for a comprehensive plan. The plan as a whole contemplates:

> First, the development of the entire waterfront; second, the improvement of approaches on all sides; third, a complete system of thoroughfares; fourth, the public ownership of all spaces that may be needed by the public; fifth, the public control, so far as required for the general and individual welfare of the people, of all property not publicly owned.

The Bridgeport study, by John Nolen, is one of three which he has prepared for Bridgeport. The first was preliminary, the second is the one just finished, and the third, which is devoted to the housing question, is noticed in a subsequent section (see *Housing*, infra). At the end of the present report, with a separate introduction, is a long, carefully written, and very valuable report on "Legal Methods for Carrying out the Changes Proposed in the City Plan for Bridgeport" by Frank B. Williams.

The Evanston plan is brought out by the Small Parks and Playgrounds Association, whose president was authorized in 1916 to appoint a city-plan committee. The editor of the report is Henry Kitchell Webster, and the architects of the committee are D. H. Burnham, Jr., chairman, Dwight H. Perkins, Thomas E. Tallmadge and Hubert Burnham.

The Elgin report was presented to citizens and officials, as have been so many reports in other cities, through the enterprise of the Commercial Club. The reorganization and amplification of the railroad lines and the treatment of the river banks are the outstanding features of the plan. One of the best things in the report is the following unusual analysis of statistics of population density: average over gross area, 6.3 people per acre; average over the housing area, 8.6 people per acre; average for that part of the housing area which is well built up (this probably housing 45 per cent. of the people), 15 people per acre.

The Milwaukee report, containing Werner Hegemann's discussion of the city plan, is strictly educational, even in a measure propagandist, rather than such a thoroughgoing report as that recently made by Dr. Hegemann for Berkeley and Oakland, Cal. The report takes up concretely several of Milwaukee's most pressing problems, such as the river front, housing, and a civic center.

Sacramento has been a much studied town from a city-planning standpoint. All that the new report of the State Capitol Planning Commission attempts to do is to chronicle the history of the several studies made by Messrs. Robinson, Hegemann and Nolen, giving in appendices brief extracts from their reports.

The Chicago Plan Commission, which has issued so many excellent publications, has issued during the year a revised edition of Wacker's well known *Manual of the Plan of Chicago*, a book prepared for study in the Chicago schools; a compilation of endorsements, under the title, "Chicago's World-Wide Influence in City Planning"; and an impressive argument for the use of the city's waste to reclaim land under water for the South Shore lake-front parks. There are data in the latter report of considerable general interest and suggestion. The minor reports published during the year include reports on building zones in New York, the market system of Boston, the thoroughfare system of Fitchburg, Mass., traffic conditions and street lighting in New Haven, Conn., the River des Pères improvement in St. Louis, and car operation and routing in Rochester, N. Y. The year's output also includes a list, too numerous for detailed mention, of annual reports of city-planning commissions and like bodies, those of the Massachusetts Homestead Commission and the Massachusetts Federation of Planning Boards being state-wide in scope. In his annual review of the city-planning reports of the year in the *National Municipal Review*, Charles Mulford Robinson comments on the remarkable activity of the last two years as follows:

> A good many people no doubt have been surprised that war, instead of proving a check to the planning and improvement of cities, has provided an impetus. But this is only as it should be. War reveals the realities of life. It sifts the luxuries, leaving the necessities; it puts a premium on the prevention of waste; it exalts efficiency; "preparedness" is its fetich. So city planning, which does all of these things, emerges from the test of war with better popular appreciation and higher esteem than ever before, and the output of American city-planning studies, which this annual review attempts each year to appraise, maintains its volume and content.

A new volume in the National Municipal League Series is *Town Planning for Small Communities*, by Charles Sumner Bird (New York, D. Appleton & Co). The book is divided into two parts, the first of a general nature, the second dealing with a typical small city, Walpole, Mass. A city-planning committee was appointed in Walpole in 1913, development plans were made by John Nolen, and since the beginning of 1914 the programme agreed upon has been systematically put into operation. What has been accomplished in street-widening, park-making, tree-planting, drainage, school gardening, and so on, and what is projected for the near future is carefully described, with a view to the application of the same ideas to any other small city.

City-Planning Conferences.—The National Conference on City Planning held its ninth annual meeting in Kansas City on May 7-9. With probably 250 registrations from out of town and liberal attendance of Kansas City people, it was at once the best and most largely attended meeting of the series. The results seem to show that city planning is more vital than ever, now that war is enforcing appreciation of the value of conservation and preparedness, and that the city-planning movement is not of the East alone but is truly national.

The Conference voted itself out of existence in order that a new body might take its place, *viz.*, the American City Planning Institute, to be managed by a board of governors 21 in number. It has four classes of members: (1) members who have had special training in engineering, landscape architecture or architecture, or who have special attainments in city planning; (2) law members, who are members of the legal profession especially interested in municipal law; (3) associates, who represent the non-technical propagandist element; and affiliated organizations. The first two classes pay $10.00 dues, the third $5.00, and the fourth $25.00. All must be elected by the board of governors, who may also create a class of junior members if they think it desirable. The underlying purpose of this action, which has been under discussion by city planners for two years, is to create a technical group which may meet with the hope of furthering the science of the city planning, as has not been practicable to any large degree at the general conferences, in which discussion has had to be more or less elementary. Other important action was the adoption of resolutions authorizing the appointment of a committee to offer to the Government the services of the city planners of the country wherever they can be most effective, either in this country or in Europe, and calling to the Government's attention, the bad housing conditions which threaten to arise up at its new armor plant at Charleston, West Virginia.

Indiana real-estate men made an interesting contribution to city-planning propaganda by conducting a missionary city-planning tour under the auspices of the Indiana Real Estate Association, of which Lee J. Ninde of Fort Wayne is president. The initial meeting was held in that city, and from there a party representing various real-estate boards, together with speakers, left for a ten-days' tour, including stops at Elkhart, South Bend, Michigan City, Hammond, Gary, Kokomo, Logansport, Terre Haute, Crawfordville, Evansville, New Albany, Indianapolis, Muncie, Anderson and Marion. At each city arrangements had been made for either a luncheon or dinner meeting, to which were invited all local real-estate men and other citizens.

Building Zones and Restrictions.—The zoning ordinance adopted in New York City in 1916 (*A. Y. B.*, 1916, pp. 215, 735) marked the inauguration of a new epoch in American city planning. Prior to the enactment of this law, public restrictions regulating the height, use and area of buildings had received but scant consideration. Such regulations were almost unknown in most cities, and only a few, among which the chief were Boston, Los Angeles, Minneapolis and Washington, had any experience with them at all. A bulletin of the St. Louis Public Library, compiled by Earl H. Davis, the librarian of the municipal reference branch, and issued during the year, deals with the progress of zoning. The question has been considered or developed in one way or another in the following communities: Akron, Baltimore, Berkeley, Cal., Boston, Bridgeport, Conn., Chicago, Cleveland, Davenport, Iowa, Des Moines, Iowa, Durham, N. C., East Orange, N. J., Elgin, Ill., Elkhart, Ind., Fairfield, Ala., Los Angeles, Mansfield, Ohio, Milwaukee, Minneapolis, Monrovia, Cal., Muskegon, Mich., Newark, N. J., Niagara Falls, Norfolk, Va., Omaha, Philadelphia, Pittsburgh, Richmond, Va., Sacramento, Salem, Mass., St. Louis, St. Paul, Seattle, San Francisco, Walla Walla, Wash., and the states of Minnesota, New York, Massachusetts, Ohio and Wisconsin. To this bulletin is added a bibliography which is a further indication of the growth of interest in the question.

The New York zoning ordinance has been brought into court in a number of cases. In two (Rotterdam Holding Co. *vs.* Hunts Point Garage Co. and Green *vs.* Hunts Point Garage Co., Inc.), the actions were *pendente lite* restraining the defendant from erecting a garage in violation of the zoning law. As the court held that the permit obtained for the erection of the garage was perfectly legal, the question of constitutionality was not considered. The case of Anderson *vs.* Steinway & Sons was an action to enforce specific performance of a contract of sale, which contained the usual conveyance and warranty conveying the fee simple of the premises free from all encumbrances. The purchasers, Steinway & Sons, acquired the property with the purpose of improving it with a warehouse. Between the making of the contract and the date set for the delivery of the deed, the zoning resolution was passed, restricting the block to residential purposes. The Supreme Court held that the purchasers were entitled to take title whether the resolution was constitutional or not, as the zoning resolution did not constitute an encumbrance or restriction within the meaning of the contract, nor did it in itself render the title unmarketable, as the marketability of property has reference only to a defect or a doubt of the title. The Appellate Division of the Supreme Court, however, reversed the lower court, holding that specific performance would be inequitable whether the zoning resolution was valid or invalid, but refused to be drawn into a discussion of the constitutional point. This opinion of the Appellate Division has been confirmed by the Court of Appeals.

In Whitridge *vs.* Park there was an application for an injunction to restrain the maintenance of a restaurant at 47 Fifth Avenue, established in a residential building in a residential district in violation of the zoning ordinance. The Supreme Court decided that its injunctive power was not available in behalf of a private individual in enforcing the zoning resolution, on the ground that the restaurant did not injure adjoining property in such a manner as to warrant a differentiation between the injury suffered by it and that suffered by the remainder of the community, and second, that equity does not undertake to restrain an act which violates a municipal by-law or ordinance unless the act is a nuisance *per se.* The Appellate Division sustained the lower court.

In Lincoln Trust Co. *vs.* Williams Building Corporation the plot of land in question was sold in fee simple free from all encumbrances. The question presented was whether the restrictions of the zoning resolution constituted an encumbrance which would absolve the purchaser from the contract. The Supreme Court held that it did not, as the resolution is in the nature of a governmental regulation subject to which all property is held and all contracts and conveyances made.

The Reconstruction of France and Belgium.—During the year there was held in Paris an *Exposition de la Cité Reconstituée* organized by the French Association of Municipal Engineers under the patronage of the national and local governments. Plans for the reconstruction of Rheims and other towns and villages in the war zone, as well as plans of foreign towns, were exhibited by skilled and scholarly French architects and municipal engineers. There were also photographs and drawings of some of the destroyed Flemish towns, with plans for the reconstruction of their ruined quarters and public buildings. As yet the most important outcome of the Exposition has been the formation in Paris of a school of public art and town planning (*École d'Art Public*). Of this the organizing leader is M. Patris, a distinguished Belgian architect, who, though a simple alien and refugee without wealthy or official backing, has collected in the course of the exposition promises of teaching help and part-time service, all of course unpaid, from no fewer than some 37 colleagues.

George B. Ford, in an article in the *Journal of the American Institute of Architects*, describes "What France is Doing in City Planning in Time of War":

> Despite the fact that France led in city planning during the greater part of the last century, she has been surpassed by many other nations in recent years. One of the good things in France, therefore, directly traceable to the lessons which the war has taught, is the strong city-planning movement aimed at correcting some of the deficiencies in French town planning. This movement is headed by the Institute of City Planning (Institute des Architects Urbanistes) of which M. Eugene Henard is president. The Institute was founded in 1915, and the movement centers about the Loi Cornudet recently enacted by the National Assembly. This law provides for thoroughgoing compulsory city planning throughout the country, and its enforcement will place France in the lead in city planning. The expression of this tendency is shown in the official rebuilding plans for Rheims and many other ruined towns, and in the condemnation of unsanitary quarters in Limoges and Marseilles, and in the great port and canal work at Marseilles, Bordeaux, Rouen and Havre. . . . Perhaps the most interesting of all are the plans which are being made for the reconstruction and extension of the bombarded cities. The recent official plans for Rheims and Claremont-en-Argonne and the competition plans for Revigny are typical of the foresight that is being shown in remedying the evils in sanitation and promoting the conduct of business and convenient living in the older cities.

The new *Loi Cornudet* provides that all ruined villages, towns and cities shall be reconstructed along comprehensive lines by local commissions, controlled by central authorities in the departments and at Paris. The application of sound practice in city planning throughout the devastated region is assured. Prefect Mirman of the Department of Meurthe-et-Moselle, according to Mr. Ford, said that he believed the application of these principles in reconstructing the devastated region would have a remarkable effect on the whole of France, and that it would mean eventually the replanning of the old unsanitary and inconvenient parts of all existing cities and towns.

HOUSING

Housing as an Industrial Problem.—There has been unusual activity along housing lines during 1917, largely because of the pressure for adequate housing facilities in those communities in which war industries have increased the population out of all proportion to the facilities available to provide for them. The cities are beginning to realize that they may lose these increments after the war if they do not give attention to this pressing problem, while industrial concerns are beginning to understand that their output will suffer if they do not give attention to the housing situation.

Bridgeport, Conn., is one city in which the housing problem has assumed dangerous and alarming proportion. In August, 1916, the Bridgeport Housing Co. was organized with a capital of $1,000,000. It plans the development of a tract of considerable size near the outskirts of the city and of another in the more central portion of the town. Two kinds of development are to be carried out—single-family houses built in terraces and apartment houses with a small number of rooms in each apartment. Architects have been selected and contracts awarded and the work is going forward with vigor and energy. Besides the Bridgeport Housing Co., several smaller housing enterprises have been launched, one of which plans the erection of large tenement houses with apartments of from three to five rooms each, with large outside courts, roof playgrounds and other features for saving housekeeping labor at minimum expense.

Housing problems are pressing in other Connecticut cities. In his annual message the mayor of Waterbury declared:

> The unexpected growth of the city has forced upon us a housing condition that must be remedied as quickly as possible. This matter received much consideration in the early part of the year from a committee appointed by the Mayor, under whose direction John Nolen, a landscape architect of Cambridge, Mass., made an exhaustive report. The data collected showed that there were from 1,000 to 2,000 families to be provided for. Some of the recommendations made by Mr. Nolen have been put into practical operation, and within a short time the Scovill Manufacturing Company and the American Brass Company will have erected and ready for use about 150 two and three-family houses. These with building operations carried on by others, will go a long way towards relieving the scarcity of suitable homes in Waterbury.

Permits for the first group of houses to be erected for the Waterbury Homes Corporation have been issued by the city building inspector. Twenty-one houses will be erected in the first batch and more will be put up later. Each of the houses will be two stories in height and will contain six rooms.

In Charleston, W. Va., a citizens' corporation has been formed with a capital stock of $1,000,000 to build homes for the army of workingmen who will be required to construct and operate the government $20,000,000 armor-plate and projectile plant, for which Charleston has been chosen as the site. There are also extensive housing developments in the following places: Kenosha, Wis., Worcester, Mass., Erie, Pa., Acipco, near Birmingham, Ala., Greensboro, N. C., and Marcus Hook, Pa.

Workmen's Dwellings.—In Buffalo good progress is being made with a plan for sanitary buildings for unskilled labor in the Polish quarter at a safe profit of five per cent., following experience of 20 years in Washington and other cities. In September, 1916, the Buffalo Housing Co. was incorporated. The plan for a large group of houses originally contemplated has been temporarily postponed, but a sample four-family house, or, more accurately, a double two-family house with a separate entrance for each family will be finished before spring of 1918. More land adjacent to this site is available for further development if this experimental house proves a success.

The Bristol Brass Co. of Bristol, Conn., is erecting a new boarding house containing 80 rooms, with 40 baths, in which it will house, free of charge, the single men in its employ. Steam heat, electric light and other modern conveniences are to be provided, and a completely equipped laundry is to be installed. For the married men a large number of modern houses have already been erected by the Company, and work is to be started on 70 more in the spring of 1918.

A contract was recently let for the erection at Duke, N. C., of 30 tenement houses, with apartments ranging in size from three to five rooms, for the Erwin Cotton Mill Co. In erecting these new homes, which are to be modern in every respect, W. A. Erwin is carrying a step forward his general scheme for making a model mill village of Duke.

St. Paul's Association for the Betterment of Housing Conditions has undertaken the erection of a group of model houses for working men. The enterprise is conducted by a special subdivision of the Association, capitalized at $30,000. The plan involves the erection of six or eight houses to a block, with plenty of room for lawn space in the front and garden plots at the rear, the houses to rent at from $10 to $16 a month.

Plans for what is said to be the first model village for Mexicans solely, to be located at El Monte, Cal., have been announced by Dr. J. L. Pomeroy, county health commissioner. Forty acres of the Baldwin Ranch at El Monte have been leased for the purpose, and a contractor has been employed to lay out the ground and to erect sanitary cottages for the Mexicans of the district.

Indiana.—Another victory for the cause of better housing in Indiana was scored during the 1917 session of the legislature, in the passage of a measure for the regulation of housing conditions in villages and towns. The existing tenement-house law applied only to the cities of the state and regulated only dwellings in which two or more families lived.

Michigan.—Michigan secured in 1917 a state housing code. Several years ago Grand Rapids, the second city in the state, adopted a housing code which has been well enforced. The results were so good that even the reluctance of Detroit was largely overcome and its Board of Health was enabled to adopt a code of rules that is virtually a housing code (see "Detroit," *infra*). Now the local ordinance of Grand Rapids has been converted into a state law. The new law is similar in plan to the Grand Rapids ordinance, but follows more closely Veiller's model law, departing from this guide in only a few instances; in some of which it improves upon its model. The law applies to every city and organized village in the state containing 10,000 or more population, now 30 in number.

New Jersey.—Through the effective work of Miles W. Beemer, secretary of the state Board of Tenement House Supervision, New Jersey has very materially strengthened her tenement-house law. Hereafter tenement houses three stories in height must have fire escapes. Heretofore the Board was powerless to order fire escapes upon such houses, the law having prescribed them only for buildings four stories and over in height. The new law also prohibits in future tenement houses wooden shingle roofs, requiring both roofs and dormer windows to be of fireproof material. The size of outer courts in new tenements is increased, though it is still very inadequate, and the minimum size of rooms in new tenements has been very materially increased.

Baltimore.—In Baltimore a new housing code has been drafted by a committee under the chairmanship of Judge Alfred S. Niles and is now before the City Council for adoption. It provides that dwelling houses built after the law goes into effect shall have ample cubic air space and light in each room, and that water closets shall be within the houses instead of in the yards. In the newer parts of the town builders are putting up on their own account houses for rent or sale which have light in each room. The mayor has appointed a large and representative committee on public health and housing to inquire into and suggest remedies for improving housing conditions. As a result of the inquiries of this committee, an Octavia Hill Association, on the lines of a similar association in Philadelphia (*A. Y. B.*, 1915, p. 234), was about to be formed, but the project had to be dropped temporarily on account of the war.

Detroit.—The Charity Organization Society of Detroit, acting upon the conviction that bad housing conditions were the basic factor in an increased death rate, has formulated and presented to the Board of Health a housing code for the city, dealing with questions of light, ventilation and sanitation. This code, which in many respects is one of the best housing codes in the country, has been adopted by the Board, although it has not yet been officially promulgated and is not, therefore, operative. Dr. Wm. H. Price has had an expert study made of the housing work of the Health Department for the purpose of placing that work upon a modern and efficient basis; steps to accomplish this have been taken.

El Paso.—Two thousand disease-breeding community houses (*jocales*) in El Paso, Tex., where poor Mexicans lived in the midst of filth and squalor, were torn down by the Health Department of El Paso during 1916-17 as a part of a persistent campaign against disease. Hundreds of new tenements to house those evicted were erected as a result. Enforced health regulations have required all apartments to be above the street level and all buildings to be of more substantial materials than tin, mud and scraps of lumber. El Paso, however, has no housing law, and the tenements conform to no standard. Most of them are one-story, with rooms that are too small and insufficiently lighted. They are generally without inside toilets and entirely without bathrooms. An investigation of living conditions by a Federal inspector has been undertaken, and the Associated Charities and others interested in improving conditions are hopeful that his disclosures will bring about the enactment of a housing code.

Minneapolis.—A housing code for Minneapolis was signed by the governor of Minnesota on March 30. The new law, combined with a building code secured in 1916, places Minneapolis among the foremost of American cities in assuring to their citizens of to-day and to-morrow minimum standards, at least, of light and ventilation, decent sanitary conveniences, safety from fire and proper privacy. The Civic and Commerce Association has signified its intention of following up the good work by backing up, in every way possible, the building and health departments in the enforcement of the law.

Housing Conferences and Reports.—The National Housing Association's conference for 1917 was held in Chicago on Oct. 15-17. Among the questions discussed were: "The Real Estate Man and Housing," "How Can We Cheapen the Workmen's Dwelling?", "What Employers Have Done to House Their Employees in the United States," "The Housing of the Single Worker," and "The Zoning of Cities." A housing conference was held at Pittsburgh on June 8 in conjunction with the National Conference of Charities and Correction.

According to the National Housing Association, a housing investigation has been included for the first time in an American city-planning study in the report made to the city-improvement committee of the Akron Chamber of Commerce by John Nolen, entitled, "Housing in Relation to City Planning, a Part of the City Plan and Civic Survey for Akron." This industrial city finds its housing problem chiefly one of providing low-cost accommodations of approved standards for workingmen and their families. Mostly detached, single-family, frame houses of types generally good are being provided. The number of permits for apartments or flat houses and the terrace or row are increasing monthly, but the ratio of detached, single-family houses is higher as compared with the flat or row houses. The Firestone Tire & Rubber Co. is soon to build 1,000 new houses in Firestone Park, South Akron, adjoining their plant. The Goodyear Tire & Rubber Co. has similarly announced that 1,000 new houses will be built by that company in East Akron, and it is understood that a new allotment has been bought by the B. F. Goodrich Co. for similar purposes.

On the housing aspect of city planning there are several reports. Of these the most elaborate is that on the Bridgeport situation (see *supra*) by John Nolen. A "model" industrial village erected for the Viscose Co. at Marcus Hook, Pa., by Ballinger and Perrot of New York and Philadelphia forms the subject of an attractive brochure. From California comes much interesting and valuable material in the illustrated annual report of the state Commission of Immigration and Housing. A report of housing investigations in the leading cities of the state, an A.-B.-C. of housing (in which the "B." stands for city planning), a plan for a housing survey, and constructive housing, are headings which well indicate the scope of the report.

A Housing Competition.—Our belated recognition of the fact that the immigrant ignored does not become thoroughly Americanized as rapidly as we could wish has led to a recognition of the further fact that the kind of dwelling we often provide for him and his family tends to retard rather than hasten the process of assimilation. The National Americanization Committee has held a housing competition designed to secure from architects and builders in all parts of the country plans and specifications which would prove the practicability of better dwellings. The conditions specified an industrial community of 35,000 population, on a level site, with a density of population not to exceed 65 persons per net acre. Three types of dwellings were called for: (1) a single-family house; (2) a single-family house similar to the first except that two more bedrooms and a bathroom were to be provided for lodgers, two to each bedroom, the lodgers and the family each to have their own entrance from out-of-doors; and (3) a large boarding house for 30 lodgers, two in a room, in which the family and servants' part of the building was again to be separated from that of the lodgers with no means of communication except through the dining-room. In all cases there was to be provided 50 sq. ft. of floor area per person in each bedroom and a window area not less than one-eighth of the floor area.

Three hundred and sixty-nine designs were submitted in the competition, and first and second prizes of $300 and $100 were awarded for each type of dwelling. The jury in making these awards was guided by considerations of sanitation, convenience and comfort, privacy, economy of construction and maintenance, and æsthetic values. The interest excited by the competition has been even more widespread than was anticipated, and as many of the designs contain suggestions valuable not only in the comparatively restricted field of immigrants' housing, but also in the wider one of wage-earners' housing generally, the *Architectural Review* devoted two numbers to them, republishing not only the prize winners, but also many of the others, together with critical and explanatory articles.

Judicial Decisions.—A decision of far-reaching consequences is that handed down by the New York Supreme Court in 1916 in the Dewey Theatre case. Certain questions had arisen with regard to the alteration of an old church building on Fourteenth Street into a theatre. A taxpayer in New York City, who in the legal sense was not a party in interest, brought an action for an injunction to restrain the superintendent of buildings from approving the plans or issuing a permit for the alteration and reconstruction of the building in question. Certain novel questions were thus presented, one of the most important of which was, Can an action be maintained by a taxpayer to restrain the superintendent of buildings from approving plans for an alteration on the ground that the plans do not comply with the building laws? Heretofore, it has generally been thought that the only remedy which a citizen possessed in cases where a public official was permitting things contrary to the law was to seek to bring about, if he could, the removal of the public official in question. The decision of the court assumes great importance, for Justice Greenbaum held that an action may be maintained by any taxpayer to restrain a superintendent of buildings from approving plans for the erection or remodelling of a theatre on the ground that they do not comply with the building law, such right being conferred under the general municipal law which authorizes a taxpayer's action to prevent any illegal official act. Another important question involved was whether the board of appeals connected with the building department, known at that time as the board of examiners, having authorized the construction contrary to law, such action on their part was not final and conclusive and binding upon the superintendent of buildings. It had heretofore been thought in New York that such was the case, but Justice Greenbaum disposed of this contention and held that the decision of the board of appeals in these circumstances was not final and conclusive, and that the superintendent of buildings was not bound to approve the plans if they did not comply with the building laws.

FIRE PREVENTION

Fire Losses.—It is a matter of regret not to be able to report a reduction in the amount of the national fire waste for the year (see XIII, *Property and Casualty Insurance*), but there is a well understood reason for this. The tremendous impulse given to the manufacture of explosives, a speeding-up of industry in these hazardous trades, and the enforced use of many properties for the production of munitions which were never intended for such industries have brought additional fire hazards which have been registered in an increased destruction of such properties. The greatest conflagration of the year, however, that at Atlanta, Ga., on May 21 (see XX, *Civil Engineering*), arose from the universal hazard of frame construction in congested districts.

Canada, according to the eighth annual report of the Dominion Commission of Conservation, has the greatest fire loss *per capita* of any country in the world from which statistics are available, and the *per capita* loss is constantly increasing. The average *per capita* fire loss in various countries from 1912-15 was: Canada, $2.97; United States, $2.26; Spain, $1.86; France, $0.75; Germany, $0.29; Switzerland, $0.13. Winnipeg's annual fire losses, as given by the chief of the city fire department, show a considerably higher *per capita* average than that of some 300 leading North American cities. In 1916 they amounted to $750,000, practically $3.75 *per capita* for a population in round numbers of 200,000.

Personal Liability for Fires.—A number of states are considering the enactment of laws placing upon persons who have fires on their premises because of failure to comply with fire-prevention requirements, the financial responsibility for the cost of putting them out. So far Pennsylvania is the only state which has actually enacted such a law, and it relates only to second-class cities. Thus a salutary principle which has a large influence in keeping down the fire losses in European cities, where the losses prior to the war averaged from one-fifth to one-tenth of the average *per capita* losses in American cities, is being introduced into American municipal law. The movement was started several years ago by the New York Bureau of Fire Prevention, which brought suit to recover the cost of extinguishing a fire and obtained a decision under a provision that had been in the city charter for a quarter of a century but had never before been used (*A. Y. B.*, 1915, p. 273).

War Services of Fire Underwriters.—Following a conference in Washington between the president of the National Board of Fire Underwriters and the members of the Council of National Defense and various government officials, a plan was developed for the mobilization of the insurance interests of the United States to coöperate with the Government in safeguarding during the war the nation's foodstuffs, industrial plants, raw materials and water supply. The Board has placed at the disposal of the Government the services of its investigators and an immense fund of classified information concerning the nation's resources and industrial capabilities. One of the chief things undertaken by the Board in conjunction with the Government is the protection of all warehouses used for the storage of grain and other foodstuffs, and cotton. The Board has also furnished to two branches of the Government complete particulars concerning the water-supply systems of all cities with a population exceeding 20,000, covering over 300 cities. This information, collected during a period of 15 years by trained engineers, consists of maps and data concerning the location of reservoirs and distribution systems, including the size and location of water mains, and many other valuable facts. With such information at hand, the Board believe it will be much easier for the authorities, in case water supplies are endangered, to safeguard from interruption this most vital of all human needs.

The Board has adopted a grading schedule to be followed in waterworks construction and operation, in which the details are classified under 32 headings, dealing with such questions as appointments, organization, records and plans, pumping capacity and fuel distribution.

Waterfront Protection in New York.—A number of measures have been adopted by the New York Fire Department to meet possible emergencies arising from the state of war. One of the most important is the organization of an auxiliary fleet of fire boats. The greatest present fire hazard in New York, according to Fire Commissioner Robert Adamson, in an article in the *American City,* is on the waterfront, because of large shipments of munitions and supplies to Europe and because of the wooden piers. In 1916 the biggest fire in the city was the burning of a pier in Brooklyn. An auxiliary fire-boat fleet consists of 143 powerful tugboats belonging to the railroads entering New York City, Jersey City and Hoboken, the Standard Oil Co., the Bush Terminal Co. and the Jay Terminal Co. The water-front has been divided into ten zones, to each of which certain of these tugboats are assigned. When a fire occurs, the Fire Department operators telephone the railroad tug dispatchers in the zone affected. It is then the dispatcher's duty to locate not less than two tugs and direct them to proceed to the scene of the fire, if necessary, dropping their tows at the nearest piers. These boats have already done splendid service at fires and in case of real emergency would be invaluable.

The Two-Platoon System for Firemen.—In most American cities firemen give continuous service to the city, for which they are recompensed by having one day off in six, meal hours at home, an annual vacation of two weeks, sick leave with full pay, and service and disability pensions. A movement to give to the firemen a two-platoon system under which they will be required to work 12 hours each day has recently gained some ground in the United States. The system has been adopted by 23 cities, of which four (New York, Chicago, Spokane and Youngstown, Ohio) have abandoned it after experiment. The two-platoon system is not looked upon with favor by the ablest fire-fighting executives because it necessitates a large increase in the force, and because the firemen under this system frequently fail to give as good attention to their duties as under continuous service.

National Fire Protection Association.—The war has not especially affected the work of the National Fire Protection Association, except perhaps to speed it up. The only immediate effect upon its 1917 meeting in Washington was that it brought to it a considerable attendance of engineers from the War and Navy Departments. The Association has prepared for direct service to the Government through the Commission on Industrial Safety. A joint committee of representatives of the American Institute of Architects, the National Safety Council and the Association has been established to look after the industrial safety of the workers in plants producing for the Government.

Publications.—An extended report on the Atlanta conflagration of May 21 was published by the fire-prevention committee of the Georgia State Board of Fire Underwriters. The Pennsylvania Department of Labor published a "Fire Prevention Study" prepared by Bryn Mawr alumnæ. The Board of Fire Commissioners of San Francisco published a pamphlet describing the "Fire Prevention Laws and Organizations of Eastern Cities."

POLICE

Instruction of Policemen.—In 1915 Raymond B. Fosdick of New York gave a course of six lectures to the police of Washington. There were two lectures to sergeants and patrolmen on methods of patrol, use of weapons, methods of supervision, etc., two to the detectives on matters relating to their department, and two to the higher offices of the department, all illustrated with references to European methods. In 1917 Mr. Fosdick delivered the same course to the policemen of Cambridge, Mass., and gave special consideration to criminal identification, methods of patrol and supervision and the scientific detection of crime. This course was inaugurated at Harvard at the suggestion of Mayor W. D. Rockwood of Cambridge.

The University of California coöperates with the Berkeley police department in maintaining a course of police instruction. Northwestern University has planned a course in police instruction and has made an offer of coöperation to the Chicago police department. The University of Toledo also does some work in this field, coöperating actively with the city police department. In several other schools, including the Universities of Missouri, Chicago and Minnesota, courses are offered which bear specifically on police problems. A series of 15 lectures was given during the year by Prof. H. L. McBain of Columbia for the members of the New York force.

The police departments of the following cities maintain schools of instruction: New York, Chicago, Philadelphia, St. Louis, Cleveland, Baltimore, Detroit, Cincinnati, Newark, New Orleans, Toledo, Trenton; this list represents the schools actually in operation up to the beginning of 1917. In New York the school for recruits has been organized into a highly developed training school for all ranks with a most efficient director and competent instructors. Systematic health instruction for the members of the uniformed force has reduced the annual sick list from 5,801 days to 5,050 days. Gymnasiums have been established in many precinct station houses, where instruction has been furnished in boxing, wrestling and calisthenics, and field days and athletic contests have been held. A system of efficiency records has been devised to gauge the comparative worth of the men in the routine of performance of duty, for the purpose of rewarding the most efficient at the end of each month and giving to each man when he applies for promotion a rating in accordance with his actual efficiency. The organization of the boy police as a coöperating force is another achievement of importance. Plans for the establishment of a school for policemen and another for firemen in San José, Cal., have been made by the city manager, Thomas H. Reed. The course for the firemen will include lectures by prominent fire chiefs and experts, and will include administration and practice in climbing, jumping and rescue work and study of lighting methods. The policemen will be required to make a study of the ordinances of the city, the laws of the state and the whole penal code, and will also be given a thorough training in first-aid work. One of the most important parts of the course will be the study of criminal identification, including finger prints, the Bertillon System and the *modus operandi* system.

Police Records.—The entire system of police records in New York has been revised by Commissioner Arthur Woods. Arrests, accidents and complaints are now recorded by patrolmen in the street on loose-leaf pocket memorandum forms specially prepared in such a manner as to enable the patrolman to check the pertinent data of each case with a minimum amount of writing. Formerly patrolmen wrote their reports on scraps of paper or in memorandum books. In the station house the data of arrests, accidents and complaints are transferred to cards under the direction of the lieutenant instead of being entered in books. These cards are sent to headquarters. Each precinct sends its cards to the district inspector daily, and the reports and the returns from each district are collected by messenger in an automobile. At police headquarters the cards, of which an average of 2,000 are received daily, are transferred to punched Hollerith tabulating cards, under the direction of a statistician of wide experience. By this means all police activities are recorded and classified with a minimum of clerical labor, and the department has a complete record of every case available at any time, and is able to study different police problems by means of these records.

Employment for Former Convicts.—The police of New York are being utilized to secure employment for former convicts. The policemen are not actuated by sentimental motives. "We have done it," says Commissioner Woods, "because we believe it is one of the best ways of preventing crime." Unemployed former convicts add greatly to the burden of the police responsibility. Every ex-convict is a source of worry to the conscientious police official, who is constantly expecting trouble. Further, the difficulty which released prisoners have in obtaining work is notorious. When out of work they are much more likely to become lawbreakers. Assisting them to obtain work at once establishes a bond of friendship and reduces the police problem of preventing crime.

The Police Situation in Chicago.—Chicago's police situation is in marked contrast to that of New York. The sources of police corruption there, as in other cities, are mainly the social evil, professional gambling and the lawless saloon. Mayor W. H. Thompson aggravated the saloon situation by his order of October, 1915, "to enforce the state law against Sunday closing," regardless of local sentiment and custom, tradition and precedent. The order, according to Victor S. Yarros in the *National Municipal Review*, has never been impartially enforced. Powerful spoils politicians and others treated it with indifference or contempt, and the order became a prolific source of favoritism, cheap politics, corruption and gross unfairness. Many saloonkeepers sought and obtained "protection," which of course had to be purchased. Police officials, seeing and knowing that the anti-Sunday saloon was largely a farce, used their own discretion, corruptly or otherwise. The honest police captin had every reason to fear that if he took the Mayor's public protestations seriously and enforced the law strictly, influential politicians of the Mayor's faction would oust him on false charges. The dishonest and crafty captain knew that he was comparatively safe so long as he was backed by the "right people." The indictment and forced resignation of Chief of Police Healey and several subordinates in January, 1917, were followed by the appointment of a new chief and a new first deputy chief who are generally believed to be honest and tolerably independent. The anti-Sunday saloon law is now enforced by them with reasonable impartiality. But violations of the law continue, arrests are made every Sunday, many saloon-keepers refuse to take the new policy seriously, and the Mayor's various activities and utterances unfortunately have not been of a character to inspire either confidence or respect.

Police Matrons.—An Association of Police Matrons has been organized to meet with the National Conference on Social Work. Miss Margaret D. Corbett, police matron of Rochester, N. Y., has been chosen president.

NUISANCES

Smoke.—The Chicago Railway Terminal Commission has gone on record that it sees no reason why the ordinance to adjust certain matters between the South Park commissioners, the city and the New York Central Railroad should not provide for the electrification of the suburban service of the railroad within five years of the date of the passage of the ordinance, and the complete electrification of all branches of the service in Chicago within 10 years from the passage of the ordinance. Among those signing the report are: Bion J. Arnold, Walter L. Fisher, E. H. Bennett, Frank I. Bennett, commissioner of public works; Morton S. Cressy, assistant corporation counsel; Ellis Geiger, chairman of the Committee on Railway Terminals, and John F. Wallace, chairman of the Railway Terminal Commission.

The decision of the lower court in Yonkers *vs.* Federal Sugar Refining Co., a case in which the Company obtained a judgment against the city for the sum of $37,778.21, has been reversed in the New York Court of Appeals and a decision rendered dismissing the proceedings. This is the end of a long litigation. In August, 1907, a complaint was made by some property owners living in the vicinity of the Company's plant that their property was being damaged, and they were being annoyed by reason of the fact that the refinery was using soft coal and discharging soot and cinders. A resolution was adopted by the Common Council directing the city attorney to institute proceedings and apply for an injunction against the Company. A temporary injunction was granted, which was later vacated and the matter sent to a referee to determine whether a nuisance was being committed. After many hearings the referee decided in favor of the city. An appeal was taken by the Company to the Appellate Division, who reversed the judgment of the referee and held that the city was not the proper party to bring the action. The city took an appeal to the Court of Appeals, which sustained the lower court. Thereupon the Federal Sugar Refining Co. applied for the appointment of a referee to assess the damages they had incurred by reason of the injunction. The referee rendered an opinion against the city for $37,778.21. An appeal was taken by the city to the Appellate Division, which affirmed the report of the referee with the exception that it reduced the amount of the damages. An appeal was again taken by the city to the Court of Appeals, with the result of a final decision in favor of the city.

Noise.—An extended review of what has been accomplished in the suppression of noises was published in the *National Municipal Review* for May, 1917. The decision of the automobile manufacturers to make no more cars with muffler cut-out is considered to be a most advanced step. Pittsburgh has appointed a "noise policeman," following a precedent established by Baltimore. The Pittsburgh Civic Club, which was responsible for this action, declares that many of the nerve-racking city noises "can be entirely eliminated, and the rest can be much reduced, to the injury of no one and the gain of all in health, comfort and efficiency."

Billboards.—Undoubtedly the most important development of the year in the movement to control outdoor advertising is the decision of the U. S. Supreme Court in Cusack Co. *vs.* Chicago (242 U. S. 526), upholding an ordinance of the city of Chicago prohibiting the erection of any billboard or sign-board over 12 sq. ft. in area in any block in which one-half of the buildings on both sides of the street are used exclusively for residence purposes without first obtaining the written consent of the owners of the majority of the frontage on both sides of the street. The propriety of the creation of residential areas from which objectionable structures may be excluded is recognized. The Court holds that the exclusion of billboards from such areas may clearly be supported upon grounds relating to the health, safety and good order of such residential areas, and found that more than enough had been shown in the case to make it clear that such structures create unsanitary and hazardous conditions which justify their repression and if desired their exclusion from residential areas. The opinion of the Court further contained an explicit recognition of "the propriety of putting billboards as distinguished from buildings and fences in a class by themselves" for the purpose of regulation and prohibition. No æsthetic consideration was involved in the case. Heretofore the chief obstacle in the way of the abatement of the outdoor-advertising nuisance has been the reluctance of the courts to concede legislative power to regulate these structures as such. A decision by the highest court in the country to the effect that such structures are in a class by themselves and do create unsanitary and dangerous conditions will have a far-reaching effect upon the courts all over the country.

The Supreme Court of the Philippine Islands has at last opened the door toward the protection of the eye against nuisances in the same fashion as the nose and ear have long been protected. In the case of Churchill *vs.* Collector of Internal Revenue, Justice Trent gave utterance to the following significant paragraphs in holding that "a statute which empowers a collector to remove billboards, if they are objectionable to the sight," is in proper exercise of the police power:

> Offensive noises and smells have been for a long time considered susceptible of suppression in thickly populated districts. . . . Such statutes as these are usually upheld on the theory of safeguarding the public health. But we apprehend that in point of fact they have little bearing upon the health of the normal person, but a great deal to do with his physical comfort and convenience, and not a little to do with his peace of mind. Without entering into the realm of physiology, we think it quite demonstrable that sight is as valuable to a human being as any of his other senses and that the proper ministration to this sense conduces as much to his contentment as the care bestowed upon his senses of hearing and smell, and probably as much as both together. Objects may be offensive to the eye as well as to the nose or ear. Man's æsthetic feelings are constantly being appealed to through his sense of sight. . . . Governments have spent millions on parks and boulevards and other forms of civic beauty, the first aim of which is to appeal to the sense of sight. Why, then, should the government not interpose to protect from annoyance this most valuable of man's senses as readily as to protect him from offensive noises and smells?

Connecticut has a new billboard law and the state police department is rigidly enforcing it. Applications for licenses had to be filed by Aug. 1. The license fee is one-half cent per square foot per annum, the space to be computed by measurements to the outer edge of all frames, billboards, etc. The only exemptions are: (1) signs containing less than four square feet; (2) signs upon the property upon which the goods advertised are manufactured or offered for sale, or upon which the business advertised is carried on, wholly or in part; (3) the advertisement by any town, city, or borough of its industries. A separate application and license is necessary for each and every advertisement or space structure so used or offered for rent. No license will be issued for any sign that obstructs the view from the highway of steam or electric railway tracks within 300 ft. of any grade crossing.

The City Council of Los Angeles passed in the spring a measure regulating billboards in the city. The existing billboard ordinances affecting the height, construction, etc., of billboards were reënacted. A central business district was established within which no other restrictions than those contained in the present ordinance are enforced. A semi-business district, defined as any block where more than 50 per cent. of the occupied frontage is occupied by buildings utilized for business purposes, was established, within which no billboards larger than 12 sq. ft. in area are permitted except upon the written consent of 51 per cent. of the property frontage in such block; furthermore, no billboards more than 12 sq. ft. without such consent can be established within 15 ft. of another billboard. A suburban district was established, defined as "all portions of the city which are divided or subdivided into lots of 100 ft. or less frontage on any public thoroughfare," within which there is no new restriction upon billboards, except that they must be at least 50 ft. from any residence building. The residence district established by the ordinance is defined as all portions of the city not included within the business, semi-business or suburban district, and in this district no billboards greater than 12 sq. ft. are permitted with or without the consent of the property owners. As to the establishment of new billboards the provisions of the ordinance took effect immediately, but with respect to existing billboards 12 months from the date of passage of the ordinance was given, during which time adjustment might be made. No billboards in any section of the city may be installed or maintained within 50 ft. of any building used exclusively for residence purposes. This measure became an issue of the council campaign, and, according to the *California Outlook*, all who were responsible for it were defeated by the opposition of the papers.

John T. Williams, attorney for the Pacific Coast Poster Advertising Association, has contributed to *Pacific Municipalities* a series of articles in which he aims to suggest "Vital Needs and Corrective Measures to Govern Safe Construction and Maintenance of Poster Boards." It is an intelligent attempt from the billposters' viewpoint to meet the grosser evils of the situation. It is undoubtedly true, he says, that the regulations which most municipalities are desirous of accomplishing are the very improvements most desired by the majority of those engaged in poster advertising. A model ordinance which Mr. Williams has drafted and submitted contains specific provisions against ragged and untidy advertising.

"The Billboard Nuisance" is the title of the first of a series of bulletins issued by the Division of Municipal Art of the National Highways Association with the assistance of the Municipal Art Society of New York. By illustrations it shows how seriously are beautiful and effective views interfered with by billboards.

MUNICIPAL ORGANIZATIONS

National Municipal League.—At the Springfield meeting of the National Municipal League in 1916 (*A. Y. B.*, 1916, p. 229), a movement was inaugurated to extend the League's activities to include the improvement of county and state government. After a careful survey of the field and a consideration of the questions involved, the following resolution was unanimously adopted by the Executive Committee:

> *Whereas,* municipal progress is reaching the point where it is increasingly embarrassed by the relative backwardness of state and county government,
>
> *Resolved,* that the League shall hereafter devote such time and attention as may be practicable to the problems of county and state government and that efforts be made to raise additional funds to meet the expenses of the proposed broadening of the League's activities.

Beginning with the March issue, the *National Municipal Review* has been published bi-monthly instead of quarterly. This action is a part of the policy of development inaugurated at Springfield and authorized by the Executive Committee. It brings the magazine into closer and more frequent touch with the members and subscribers, and increases its effectiveness as an interpreter of current municipal events and as an organ of sound public opinion on governmental problems.

The twenty-third annual meeting of the National Municipal League was held at Detroit, Mich., Nov. 21-23, in conjunction with the City Managers' Association, the Civic Secretaries' Association and the Conference for Governmental Research. Among the questions actively discussed were: feeding cities in war times; the war experiences of English and Canadian cities; effects of war on trained public service; city management as a profession; training city managers; executive or legislative budgets; can we have non-partisan city government; the city and the county. The address of President Lawson Purdy dealt with "Municipal Pensions," and the annual review of Secretary Woodruff discussed "American Cities during War Times and Their Problems." Formal reports were received from the committees on franchises, state municipal leagues, city management, and municipal information. An Association of State Municipal Leagues was formed, with Homer Talbot, Lawrence, Kansas, as president, and Edward T. Paxton, Austin, Texas, secretary. A committee on county government was organized for the year. This committee will consider both the pathology of the county and remedies for the improvement of conditions therein.

Lawson Purdy, George Burnham, Jr., and Clinton Rogers Woodruff were reëlected president, treasurer and secretary respectively. The following vice-presidents were elected: John Stewart Bryan, Richmond, Va.; Richard S. Childs, New York; Miss Katharine Bement Davis, New York; Frank J. Goodnow, Johns Hopkins University; Meyer Lissner, Los Angeles, Cal.; A. Lawrence Lowell, Harvard University; George McAneny, New York; Oliver McClintock, Pittsburgh; J. Horace McFarland, Harrisburg; Charles E. Merriam, Chicago; Robert Treat Paine, Boston; L. S. Rowe, Philadelphia; Charles Richardson, Philadelphia; Dudley Tibbits, Troy, N. Y.

Municipal Functions, by Herman G. James, and *Excess Condemnation*, by Robert E. Cushman, were two additions made to the National Municipal League Series (New York, D. Appleton & Company).

A Committee on County Government has been appointed. It consists of: Prof. Charles A. Beard, New York; Prof. Edward C. Branson, Chapel Hill, N. C.; Franklin N. Brewer, Philadelphia; John E. Brindley, Ames, Iowa; Harold S. Buttenheim, New York; Otho G. Cartwright, White Plains, N. Y.; Fred W. Catlett, Seattle, Wash.; Richard S. Childs, New York; Mrs. Caroline Bartlett Crane, Kalamazoo, Mich.; George H. Dunlop, Los Angeles, Cal.; Hon. William Dudley Foulke, Richmond, Ind.; H. S. Gilbertson, New York; LeRoy Hodges, Richmond, Va.; Hon. Morton D. Hull, Chicago; Prof. Herman G. James, University of Texas; Prof. Chester Lloyd Jones, University of Wisconsin; Percy V. Long, San Francisco, Cal.; Prof. Howard L. McBain, Columbia University; Albert McC. Matthewson, New Haven, Conn.; Prof. Charles E. Merriam, University of Chicago; Prof. Samuel P. Orth, Ithaca, N. Y.; Hon. Arthur N. Pierson, Westfield, N. J.; Lawson Purdy, New York; Mark L. Requa, Oakland, Cal.; Herbert R. Sands, New York; Dr. Isaac Sharpless, Haverford, Pa.; Seward C. Simons, Los Angeles, Cal.; George C. Sikes, Chicago; Elvin Swarthout, Grand Rapids, Mich.; Prof. Frank A. Updyke, Hanover, N. H.; Hon. Lewis R. Works, Los Angeles, Cal.; Clinton Rogers Woodruff, Philadelphia.

The American Society of Municipal Improvements, which was to have met in New Orleans in September, postponed its meeting for a year on account of war conditions. The League of American Municipalities which was to have met in Gary in the same month took similar action.

The American Civic Association held its thirteenth annual convention in St. Louis on Oct. 22-24. Sessions were devoted to industrial housing, St. Louis civic problems, the problems of smaller cities, national and state works and country planning. J. Horace McFarland and Richard B. Watrous were reëlected president and secretary, respectively, and Karl V. S. Howland was elected treasurer, succeeding the late William B. Howland.

The Union of Canadian Municipalities held its seventeenth annual convention at London, Ontario. Naturally the war activities of the city occupied an important place in the deliberations. One session was devoted to a discussion of the question, "How Municipal Councils Can Help to Win the War." The high cost of living and its remedy, municipal pensions, a hydro-radio railway, publicly owned hydro-electric power as a material factor in the up-building of a community, and bureaus of municipal information were among the other subjects discussed.

MISCELLANEOUS

The East St. Louis Race Riots.—The East St. Louis riots (see XV, *Labor*), unparalleled in ferocity in the history of the country, have been laid directly at the door of municipal inefficiency. This was particularly evidenced in the failure of the police to do their duty in the crisis. Other causes contributed, especially friction between the races. The police board of the city, which was the creature of evil political conditions and unable to handle the situation, was removed, and a movement to adopt a commission form of government for the city was successful at the election on Nov. 6. It will go into effect at the conclusion of the term of the present mayor.

Election Results.—In April Chicago held an important municipal election. Thirty-six aldermen were elected, or one more than half of the total number serving. There were several issues involved, but only one was "city-wide" and fundamental, this issue being "Thompsonism *vs.* an independent and non-spoils City Council." On this issue the mayor, Wm. H. Thompson, suffered a decisive defeat. The new Council is unmistakably anti-Thompson by a large majority. The City Hall machine fought the best men in the council and sought to defeat them at the primaries or at the election.

In New York in November Mayor Mitchel was a poor second, with Morris Hilquit as a good third in the contest which resulted in the election

FINANCIAL STATISTICS OF CITIES OF POPULATION ABOVE 50,000

(In Thousands of Dollars)

The figures in this table are courteously supplied by the Bureau of the Census from the report on "Financial Statistics of Cities" for 1916 in press at the end of the year. They relate to the fiscal year ending June 30, 1916, or to the first fiscal period prior thereto.

	Population, 1910	Assessed Valuation of Property	Total Tax Levy for Municipal Purposes	Total Revenue Receipts	Government Cost Payments			Net Debt
					For Expenses and Interest	For Outlays	Total	
Akron, Ohio	69,067	144,710	1,754	2,716	1,850	899	2,749	7,717
Albany, N. Y.	100,253	124,630	2,179	3,352	2,665	1,234	3,899	7,354
Allentown, Pa.	51,913	61,534	775	991	696	574	1,270	1,300
Altoona, Pa.	52,127	27,240	566	987	716	282	998	1,857
Atlanta, Ga.	154,839	183,259	2,307	3,858	3,132	639	3,771	4,563
Atlantic City, N. J.	46,150	97,086	1,568	2,561	2,077	691	2,768	7,256
Augusta, Ga.	41,040	36,779	551	1,162	987	267	1,254	3,076
Baltimore, Md.	558,485	868,126	11,219	18,181	14,531	3,176	17,707	66,926
Bayonne, N. J.	55,545	65,507	1,019	1,957	1,859	227	2,086	2,321
Berkeley, Cal.	40,434	45,856	878	1,459	1,107	289	1,396	1,665
Binghamton, N. Y.	48,443	46,198	1,129	1,295	1,093	538	1,631	2,072
Birmingham, Ala.	132,685	103,771	1,037	2,221	1,869	237	2,106	6,782
Boston, Mass.	670,585	1,609,321	26,569	38,397	30,545	3,449	33,994	86,271
Bridgeport, Conn.	102,054	169,667	3,323	3,443	2,521	1,667	4,188	5,719
Brockton, Mass.	56,878	55,816	1,111	1,750	1,398	470	1,868	3,423
Buffalo, N. Y.	423,715	590,213	13,213	19,032	14,309	3,475	17,784	34,597
Cambridge, Mass.	104,839	132,192	2,808	3,822	3,052	357	3,409	6,644
Camden, N. J.	94,538	77,028	999	2,477	1,830	452	2,282	4,513
Canton, Ohio	50,217	93,632	957	1,325	1,014	823	1,834	4,274
Charleston, S. C.	58,833	21,436	815	1,130	946	182	1,128	4,114
Chattanooga, Tenn.	44,604	36,381	600	943	800	231	1,031	3,672
Chicago, Ill.	2,185,283	1,032,876	55,914	87,934	61,132	31,543	92,675	71,698
Cincinnati, Ohio	363,591	610,199	9,232	14,863	13,190	3,648	16,838	61,112
Cleveland, Ohio	560,663	969,767	14,699	22,367	16,645	8,189	21,834	67,824
Columbus, Ohio	181,511	295,818	3,869	5,289	4,359	1,606	5,965	10,163
Covington, Ky.	53,270	32,127	567	960	857	332	1,189	2,595
Dallas, Tex.	92,104	120,523	2,289	3,726	2,540	1,410	3,950	5,714
Dayton, Ohio	116,577	178,831	2,051	2,913	2,270	1,332	3,602	7,517
Denver, Colo.	213,381	306,660	4,578	7,206	5,271	566	5,837	573
Des Moines, Ia.	86,368	37,680	2,111	2,230	2,007	850	2,857	4,457
Detroit, Mich.	465,766	1,176,517	17,490	23,593	13,892	12,722	26,614	21,093
Duluth, Minn.	78,466	80,516	1,754	3,219	2,068	1,271	3,339	6,834
East St. Louis, Ill.	58,547	12,577	716	1,096	867	395	1,262	1,680
Elizabeth, N. J.	73,409	72,521	988	1,609	1,304	421	1,725	2,878
El Paso, Tex.	39,279	50,012	940	1,710	1,198	962	2,160	3,119
Erie, Pa.	66,525	53,113	918	1,616	1,082	521	1,603	1,833
Evansville, Ind.	69,647	44,856	896	1,699	1,022	668	1,690	1,883
Fall River, Mass.	119,295	113,516	2,162	3,105	2,324	971	3,295	5,189
Flint, Mich.	38,550	47,591	831	1,416	829	956	1,785	2,172
Fort Wayne, Ind.	63,933	41,115	868	1,928	1,078	678	1,756	909
Fort Worth, Tex.	73,312	67,857	1,255	1,867	1,303	618	1,921	5,622
Grand Rapids, Mich.	112,571	163,726	2,004	3,226	2,463	786	3,249	3,989
Harrisburg, Pa.	64,186	52,521	1,008	1,389	1,063	271	1,334	2,753
Hartford, Conn.	98,915	193,527	3,064	4,204	3,152	1,120	4,272	9,766
Hoboken, N. J.	70,324	76,342	1,086	1,875	1,753	933	2,686	3,535
Holyoke, Mass.	57,730	66,459	1,088	2,232	1,878	352	2,230	3,252
Houston, Tex.	78,800	131,115	2,360	3,099	2,565	2,616	5,181	13,238
Indianapolis, Ind.	233,650	249,278	4,573	7,125	4,536	2,925	7,461	6,469
Jacksonville, Fla.	57,699	59,560	759	2,114	1,569	983	2,552	4,312
Jersey City, N. J.	267,779	323,882	5,369	8,860	7,693	698	8,391	26,267
Johnstown, Pa.	55,482	52,817	775	920	712	358	1,070	1,282
Kansas City, Kan.	82,331	93,607	1,373	2,201	1,948	784	2,732	5,992
Kansas City, Mo.	248,381	210,020	6,582	12,392	7,880	4,341	12,221	12,281
Lancaster, Pa.	47,227	29,414	456	719	564	242	806	1,610
Lawrence, Mass.	85,892	83,087	1,353	2,064	1,697	492	2,189	3,714
Little Rock, Ark.	45,941	34,679	428	765	668	261	929	1,135
Los Angeles, Cal.	319,198	480,745	14,058	23,305	18,119	10,074	28,193	49,780
Louisville, Ky.	223,928	214,193	3,968	6,158	4,347	1,498	5,845	12,521
Lowell, Mass.	106,294	94,503	1,809	2,502	2,043	689	2,732	2,940
Lynn, Mass.	89,336	95,087	1,763	2,568	2,085	620	2,705	4,261
Malden, Mass.	44,404	43,846	843	1,233	1,014	194	1,208	1,338
Manchester, N. H.	70,063	88,831	1,127	1,484	1,293	341	1,634	1,416

FINANCIAL STATISTICS OF CITIES OF POPULATION ABOVE 50,000—*Continued*

(In Thousands of Dollars)

	Population, 1910	Assessed Valuation of Property	Total Tax Levy for Municipal Purposes	Total Revenue Receipts	Government Cost Payments			Net Debt
					For Expenses and Interest	For Outlays	Total	
Memphis, Tenn.	131,105	118,696	1,875	3,253	2,893	351	3,344	11,923
Milwaukee, Wis.	373,857	552,090	10,395	14,017	9,910	4,986	14,796	18,270
Minneapolis, Minn.	301,408	265,152	7,736	11,155	8,910	4,147	13,057	18,878
Mobile, Ala.	51,521	33,407	367	936	769	27	796	2,991
Nashville, Tenn.	110,364	88,761	1,331	2,584	1,983	819	2,802	7,423
Newark, N. J.	347,469	438,423	9,434	15,586	12,638	3,951	16,589	39,191
New Bedford, Mass.	96,652	113,123	2,343	3,431	2,518	955	3,473	8,171
New Britain, Conn.	43,916	46,926	740	1,244	907	258	1,165	3,291
New Haven, Conn.	133,605	173,006	3,227	3,307	2,752	449	3,201	4,499
New Orleans, La.	339,075	244,078	5,419	8,670	7,855	2,922	10,777	41,732
New York, N. Y.	4,766,883	9,313,637	166,255	236,278	196,714	35,982	232,696	987,347
Norfolk, Va.	67,452	96,731	1,546	2,344	1,977	796	2,773	8,897
Oakland, Cal.	150,174	144,839	3,538	5,898	4,269	1,247	5,516	9,281
Oklahoma City, Okla.	64,205	65,110	1,474	1,690	1,261	753	2,014	6,069
Omaha, Neb.	124,096	47,564	3,212	5,705	4,128	1,076	5,204	18,231
Passaic, N. J.	54,773	51,416	671	1,096	957	313	1,270	2,974
Paterson, N. J.	125,600	114,582	1,635	2,600	2,226	616	2,842	5,342
Pawtucket, R. I.	51,622	60,660	927	1,469	1,271	161	1,432	5,347
Peoria, Ill.	66,950	24,242	1,161	1,761	1,251	805	2,056	1,124
Philadelphia, Pa.	1,549,008	2,397,619	32,835	46,668	41,314	18,031	59,345	121,316
Pittsburgh, Pa.	533,905	792,942	16,683	23,638	17,842	5,505	23,347	56,500
Portland, Me.	58,571	73,864	1,207	1,913	1,662	418	2,080	6,948
Portland, Ore.	207,214	303,006	5,029	9,087	6,244	1,988	8,232	16,236
Providence, R. I.	224,326	363,087	4,829	6,995	5,567	1,782	7,349	15,027
Pueblo, Col.	44,395	30,824	759	1,025	841	357	1,198	2,637
Reading, Pa.	96,071	62,752	1,061	1,475	1,229	243	1,472	2,224
Richmond, Va.	127,628	189,816	2,587	4,307	3,504	1,564	5,068	13,037
Rochester, N. Y.	218,149	249,043	5,235	8,162	6,460	2,600	9,060	13,245
Rockford, Ill.	45,401	22,361	1,025	1,234	875	549	1,424	637
Sacramento, Cal.	44,696	69,145	1,187	2,290	1,597	2,183	3,780	5,247
Saginaw, Mich.	50,510	47,325	840	1,292	899	146	1,045	800
Salt Lake City, Utah	92,777	172,822	1,845	4,015	2,450	1,631	4,081	6,973
San Antonio, Tex.	96,614	109,172	2,267	2,618	2,048	926	2,974	5,811
San Diego, Cal.	39,578	83,005	2,014	3,014	2,346	682	3,028	10,481
San Francisco, Cal.	416,912	542,563	12,641	20,116	14,760	7,071	21,831	43,407
Savannah, Ga.	65,064	60,226	1,003	1,635	1,256	476	1,732	3,694
Schenectady, N. Y.	72,826	66,503	1,841	2,464	1,785	251	2,036	4,506
Scranton, Pa.	129,867	84,612	1,649	2,138	1,834	259	2,093	2,875
Seattle, Wash.	237,194	212,868	8,464	15,436	10,828	5,662	16,490	34,008
Sioux City, Ia.	47,828	17,119	1,202	1,809	999	801	1,800	1,566
Somerville, Mass.	77,236	79,445	1,540	2,044	1,687	332	2,019	1,729
South Bend, Ind.	53,684	34,024	850	1,278	863	320	1,183	1,186
Spokane, Wash.	104,402	80,217	1,735	3,733	2,643	367	3,010	8,384
Springfield, Ill.	51,678	15,629	960	1,436	952	420	1,372	1,303
Springfield, Mass.	88,926	201,923	3,213	4,456	3,347	916	4,263	7,893
Springfield, Ohio	46,921	62,894	680	1,049	801	394	1,195	2,438
St. Joseph, Mo.	77,403	43,446	1,063	1,641	1,100	638	1,738	2,532
St. Louis, Mo.	687,029	733,459	14,782	26,126	17,501	6,768	24,269	19,064
St. Paul, Minn.	214,744	171,870	3,842	6,484	4,878	2,216	7,094	10,487
Syracuse, N. Y.	137,249	163,440	2,965	4,348	3,387	1,206	4,593	9,957
Tacoma, Wash.	83,743	54,629	1,283	3,396	2,323	332	2,655	9,357
Tampa, Fla.	37,782	31,006	723	1,492	914	377	1,291	3,287
Terre Haute, Ind.	58,157	37,677	837	1,077	900	178	1,078	1,280
Toldeo, Ohio	168,497	289,456	3,533	4,511	3,718	2,073	5,791	12,415
Trenton, N. J.	96,815	91,729	1,421	2,690	2,220	554	2,774	2,962
Troy, N. Y.	76,813	66,047	1,450	2,067	1,649	101	1,750	4,836
Utica, N. Y.	74,419	65,161	1,489	1,801	1,423	521	1,944	2,794
Washington, D. C.	331,069	440,415	6,606	16,001	10,180	3,129	13,309	4,717
Waterbury, Conn.	73,141	91,591	1,558	1,964	1,562	478	2,040	5,147
Wichita, Kan.	52,450	65,807	967	1,462	815	196	1,011	1,855
Wilkes-Barre, Pa.	67,105	69,420	1,014	1,279	971	285	1,256	2,455
Wilmington, Del.	87,411	85,648	1,139	1,738	1,442	709	2,151	6,429
Worcester, Mass.	145,986	189,271	3,405	5,413	4,130	1,050	5,180	7,662
Yonkers, N. Y.	79,803	135,601	2,995	3,299	3,174	906	4,080	9,262
York, Pa.	44,750	26,651	427	609	459	223	682	1,125
Youngstown, Ohio	79,066	185,392	1,900	2,737	1,819	969	2,788	5,294

of the Tammany candidate, John W. Hylan, whose plurality was 158,383.

In Philadelphia an independent ticket supported by a movement organized within seven weeks of election and representing opposition to the city administration which has been seriously involved in a scandal known as the Fifth Ward case, resulting in the murder of a special officer by gunmen imported from New York, came within 2,500 votes of defeating the Republican organization candidates, who were known as the 50-50 ticket because they were supposed to represent equally the two factions in the Republican organization.

Dayton's non-partisan city-manager form of government underwent a critical struggle for existence. The primary held on Aug. 4 resulted in the choice of the three Socialist candidates, with the Citizens' candidates (the sitting members of the commission whose terms had expired) running fourth, fifth and sixth. At the election on Nov. 6, however, the men were reëlected, the lowest man on the Citizens' ticket receiving many more votes than the highest man on the Socialist ticket, thus vindicating the city-manager form of government. The Socialists during the campaign maintained that they were opposed not to the city-manager form of government but to certain policies that had been advocated and carried out by the administration of Manager Waite.

In Springfield, Ohio, the administration favorable to the city-manager form of government was reëlected. Proportional representation worked satisfactorily to its advocates at the November election in Ashtabula.

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VII. TERRITORIES AND DEPENDENCIES

FRANK MCINTYRE

ALASKA

Economic Conditions.—The commercial development of the territory of Alaska has made substantial progress during the year. The entrance of the United States in the European War has stimulated the cultivation of land suitable for agricultural purposes and increased the production of potatoes and many varieties of hardy vegetables. Until within the last year or two the great bulk of potatoes was imported from the United States, but the potato yield of 1917 will be sufficient to supply local consumption.

Governor Strong reports that the territory still suffers from too much reservation, rather than conservation, of its natural resources. There is a slow, gradual increase in the permanent population, one of the most important needs of the territory.

Alaska's mineral production was the greatest in its history. The increase in the output of copper, which amounted in the fiscal year 1917 to nearly twice the value of the gold output, is the most striking feature of the mining history. Tungsten ore valued at $54,870 was shipped to the United States, this being the first shipment of the kind. The shortage of labor materially curtails gold production.

Legislation.—The third Alaska legislature convened in March. Seventy-five laws and amendments were enacted, among the most important being:

A direct-primary law,
A law providing for the establishment of the Alaska Agricultural College and School of Mines, to be located at Fairbanks,
An act appropriating $100,000 for the defense of the territory,
An act to establish a uniform school system and creating a territorial Board of Education and the office of commissioner of education,
An act to establish night schools to fit adult, uneducated aliens for United States citizenship,
An act providing for fish hatcheries and for the protection and care of natural spawning grounds and the creation of a Board of Fish Commissioners.

At the general election of Nov. 7, 1916, a prohibition referendum submitted to the people was carried by a large majority, and Congress in February, 1917, passed a law prohibiting the importation, manufacture and sale of intoxicating liquors for sale or gift. The Governor again invites attention to the need for an enlargement of the powers of the territorial legislature. One step in this direction was the passage by Congress of an act authorizing the legislature to establish and maintain schools.

Education.—Immediately after the control of the white public schools was transferred to the territory, the legislature enacted a series of laws relating to schools. The act establishing citizenship night schools is a step forward in the Americanization of the foreign-speaking population of Alaska. The 40 white schools outside of incorporated towns maintained during the year 1916-17 employed 50 teachers and had an enrollment of 1,364. Nine new school districts were organized during the school year, making a total of 49. Reports received from 13 of the 15 white schools in the incorporated towns show a total of 68 teachers and an increase in the number of pupils from 1,693 to 1,778.

Health.—Health conditions among the natives are steadily improving, due to the hygienic and sanitary campaigns that are being waged by the health commissioners, the teachers and the missionaries. Tubercular and kindred diseases are not so prevalent as formerly.

Railroads and Roads.—Work on the government railroad is progressing satisfactorily. The Alaska Northern Railroad, which has been purchased and made a part of the government project, and which runs from Seward to Kern Creek, a distance of 71 miles, is being rehabilitated. The road has been completed from Anchorage to the heart of the Matanuska coal fields, a total of 153 miles. The Tanana Valley Railroad, running from Fairbanks to Chatanika, a distance of 39 miles, is now being operated by the Government under lease. It is planned to purchase it and operate it as a part of the government project. Several new towns have been laid out and farming districts opened up. The private railroad from a point on Controller Bay to the Bering coal fields, about 20 miles long, is about completed.

During the fiscal year ending June 30, 1917, the Alaska Road Commission expended $576,747.90. The total mileage constructed by the Commission was on June 30, 1917, 980 miles of wagon roads, 623 miles of sled roads, and 2,291 miles of trails. This is an increase in the total mileage of about 80 miles for the year. On June 11, 1917, the main office of the Alaska Road Commission was removed from Valdez to Juneau.

Commerce and Industries.—Commerce reached the high-water mark in the history of the territory. The volume of merchandise shipments for the fiscal year 1917 amounted to $121,265,947, as compared with $97,340,420 for 1916. Shipments of copper ore increased $6,609,902 during the year, and the value of fish shipments increased $4,204,231. There was a marked increase in the value of shipments of furs, gypsum and stone, including marble. Shipments of tin decreased. The principal items of increase in imports from the United States related to lumber, hardware and machinery, and provisions (see also XIX, *External Commerce*). The following table gives the shipments from Alaska to the United States for the last three fiscal years, ending June 30:

	1915	1916	1917
Copper..	$5,182,004	$26,488,288	$33,098,190
Fish....	19,224,849	19,629,431	23,833,662
Gold....	15,348,666	16,195,635	15,409,529
All other	2,896,223	3,607,720	3,887,177

GUAM

Administration.—Capt. Roy C. Smith, U. S. N., continues as governor of Guam and commandant of the Naval Station. Among other forward steps in administration, he reports the organization of the Guam Congress, which held its first monthly meeting on Feb. 30, 1917. It is an advisory council of prominent inhabitants whose duties are to consider and recommend measures for the improvement of the island and the welfare of the inhabitants. It promises to be of material and educational value. He reports also the establishment of a court of equity and a police court, the enlargement of the Insular Patrol, and the institution of universal military training. The number of active militia enrolled on June 30 was 920.

Agricultural and Economic Conditions.—Improvement in agriculture is noticeable, though only a fourth of the fertile land is under cultivation. Among the steps in agricultural progress were the holding of an Industrial Fair on July 4-7, the lease of additional land for experimental purposes, the establishment of a general market, the distribution of seeds to farmers, and a slight increase in road mileage. The present mileage is 78, about seven miles of which is new. The public works department expended $86,376.48 during the fiscal year.

The hydrographic survey was completed in November. The cadastral survey has been continued, but only one-seventh of the area has been surveyed. The new radio station was completed in October.

The new Bank of Guam, in operation since Jan. 1, 1916 (*A. Y. B.*, 1916, p. 237), has expanded its business greatly and has become an indispensable institution. Banking relations are established with Manila, Shanghai, Yokohama, Honolulu, Sydney and San Francisco. The freight situation has improved owing to the resumption of the freight service by the Army transports.

The native population is 13,697, an increase of 412 over the preceding year. The population, other than native, consists of 219 permanent residents and 616 at the Naval Station. The 321 officers and crew of the *Cormoran*, which sank on April 7, held as prisoners of war, were transferred to the United States by the transport *Thomas* on April 30. Of this crew there remain in Guam 28 New Guinea men, who were retained on account of the risk of sending them out of the tropics.

Education.—The progress of the pupils in the schools is gratifying, though they do not learn English as rapidly as was expected. Special efforts are being made to quicken their progress in this respect. Owing to the lack of school houses and teachers, schools hold only half-day sessions. The compulsory school age has been extended from 12 to 16 years for boys only, and at present for physical training only. The amount expended during the year for education was $9,640.77. The following are the school statistics:

Number of pupils enrolled....	2240
Average daily attendance.....	1748
Total teachers and substitutes.	35
Number of schools...........	14

Sanitation.—The health of the native population shows improvement. The death rate has decreased from 21.3 to 17.5 per thousand. There was a cholera scare the latter part of December, 1916, though only one patient died. Lepers have practically disappeared. Two were transfered to Culion in the Philippines during the year. Intestinal parasites continue to be the scourge of the island. The completion of the water system in a few months is expected to lessen this evil. There are 371 cases of gangosa under observation and several cases of yaws. There were 34 admissions during the year to the tuberculosis hospital, of whom 14 were discharged and four died. The officers of the health department are the only practitioners in Guam.

Commerce and Industries.—The imports during the fiscal year 1917 amounted to $286,651.95, a decrease of $42,851.28 from the figures of 1916. Imports from the United States decreased $111,314.16, while there was a notable increase from Honolulu and from Japan. The exports amounted to $86,529.95, an increase of $19,961.75 over the preceding year. Exports to the United States increased notably while there was a decrease to Japan. Copra exportations increased by 146 tons, those to the United States being almost double those to Japan. Experiments have shown that the soil is favorable for coffee, which is of excellent quality and is the most promising crop of the Island.

HAWAII

Economic Conditions.—The territory of Hawaii has enjoyed unusual prosperity. Sugar exportations increased during the fiscal year both in quantity and value, totaling 581,318 tons, valued at $62,743,372, as against 568,584 tons valued at $54,409,585 in 1916.

The assessable property of the territory on Jan. 1, 1917, was $231,920,919, an increase of $24,950,690 over the preceding year. During this period bank deposits increased $6,312,771.33. The year's gain in postal savings deposits was $20,517.72.

On Nov. 15, 1916, the Marconi Wireless Telegraph Co. opened commercial service between the Kahuku station, Oahu, and Funabasha, Japan, a distance of some 4,000 miles, the greatest ever undertaken in regular traffic handling. These properties, however, were taken over by the Federal Government when war was declared in April.

The estimated population on June 30, 1917, was 250,627. The Japanese contributed slightly more than one-half of the increase. European immigration is at a standstill, the war showing its effects here as in the United States.

Legislation.—On Feb. 21, the ninth legislature of the territory commenced its regular biennial session. Among the laws passed were acts creating a commission to regulate food control, providing for an annual territorial fair at Honolulu for the encouragement of agriculture, revising the bank laws, amending the laws for the parole of prisoners, and providing a schedule of salaries for public-school teachers.

Education and Sanitation.—Progress is noticeable in both education and sanitation. The number of pupils enrolled in the public schools was 32,282, an increase of 6.9 per cent. The number of schools is 168, in which 855 teachers are employed. Three cases of human plague occurred during the year.

Exports.—The total value of domestic exports for the fiscal year 1917 was $74,992,805. The following table shows the value of the principal local products shipped from the islands during the last three fiscal years (see also XIX, *External Commerce*):

	1915	1916	1917
Sugar	$52,953,099	$54,400,587	$62,743,272
Coffee	650,486	418,605	391,568
Fruits and nuts (mostly pineapples)	6,310,120	6,889,705	8,355,305

PHILIPPINE ISLANDS

Political Conditions.—As recorded in the YEAR BOOK for 1916 (p. 239), the important event of that year for the Philippines was the passage by Congress of the new organic act. The new form of government provided by the act is working most satisfactorily. It has been accepted by the Filipino people as a timely recognition of their right to self-government and has greatly strengthened their friendship for the United States. The feeling of loyalty to the United States has been shown by an offer of military assistance, which has not yet been taken advantage of because there is no legal authority to call the newly organized Philippine National Guard into the service of the United States. A bill which will make this possible is now pending in Congress. In addition to the offer of a division of troops, the Philippine legislature has unanimously passed a joint resolution offering to construct for the United States a destroyer and a submarine to be added to the Navy.

Under the Act of Aug. 28, 1916, the Philippine Commission ceased to exist on Oct. 16, 1916, and was replaced by an elective senate. Thus, for the first time the Philippine legislature contains a membership composed entirely of Filipinos. The most important legislation passed during the year were acts reorganizing the government departments, fixing the salaries of the more important officers and employees of the Government, establishing divorce, and organizing a Philippine Militia. The executive departments provided by the new legislature are Interior, Finance, Justice, Agriculture and Natural Resources, and Commerce and Communications. The Department of Public Instruction is the only department specifically provided for by Congress in the organic act.

Henderson S. Martin, Vice-Governor and Secretary of Public Instruction, resigned on June 28, and was succeeded by Charles E. Yeater, who was appointed on June 29. Associate Justices Grant T. Trent and Sherman Moreland of the Philippine Supreme Court resigned on April 23, and were succeeded by Thomas A. Street and George A. Malcolm, who were appointed on June 18. The Philippine legislature at its last session provided for two additional justices of the Supreme Court, and President Wilson appointed Frederick C. Fisher and Ramon Avencena. At the same session Teodoro Yangco and Jaime C. de Veyra were elected resident commissioners to the United States to succeed Commissioners Manuel L. Quezon and Manuel Earnshaw.

Economic Conditions.—Negotiations for the purchase by the Philippine Government of the Manila Railroad were closed in January, the amount paid for the total capital stock of the railroad company being $3,990,000. The Governor General appointed Eugene E. Reed, formerly Secretary of Commerce and Police, president of the railroad, and a local board of directors. The head office was transferred from New York City to Manila.

An important transaction during the year was the sale of 15,000,000 silver pesos, one-half of which was sold to the Government of British India, and one-half, through the International Banking Corporation, to Chinese interests. The sale price was more than $900,000 in excess of the purchase price. A remarkable increase in circulation of money in the Islands has taken place in the last eighteen months, and in August, 1917, there was approximately $45,000,000 in circulation. This was an increase from a previous maximum of $33,500,000.

The Governor-General reports the great success of the new Philippine National Bank and says that it has been one of the most valuable contributions to the economic progress of the Philippines.

Education.—The Bureau of Education showed a gratifying expansion during 1916. The intermediate attendance increased 13 per cent. and secondary attendance 22 per cent. One hundred and ten more schools were opened than in the preceding year, making a total of 4,496, with an increased enrollment of more than 40,000 and showing a total enrollment of 647,256. Special emphasis continues to be laid on industrial and vocational features and the effect is shown in the increased production of furniture, hats, baskets, embroideries and lace by school children. Further to stimulate the household industries, the Bureau of Education has organized a general sales department for the production and sale of the products of the schools. The Muñoz Agricultural School has been so successful that plans are under way for the establishment of similar institutions in other parts of the Islands. The athletic work of the public schools was continued. Great stress is placed on hygiene and sanitation in the schools, and the care and welfare of young children is also taught.

In the non-Christian territory, 110 new schools were opened during the year, of which 80 were located among the Moros and pagans in Mindanao and Sulu. Of the teaching force of 11,822, only 460 are Americans. This is a decrease from about 700 in 1911. The number of Filipino teachers, 11,362, represents an increase over the preceding year of over 1,000. It is hoped that the reduction in the number of American teachers is only temporary.

Sanitation.—Health conditions continue to improve. With the exception of cholera, no epidemic presented any serious problem during the calendar year 1916. During the year, 12,847 cases and 7,986 deaths from cholera occurred, of which 1,214 cases and 513 deaths were in Manila. At the end of 1916 Manila was practically free from the disease and only scattered cases remained in the provinces. The confidence and coöperation of the people in the control of epidemic diseases has been gained as never before. The Leper Colony at Culion has had many improvements. The average leper population has been between 4,100 and 4,300.

Marked progress in the sanitation of the peoples of the non-Christian provinces has been manifest, notably in Mindanao and Sulu, and in the province of Agusan. An increased enthusiasm for hospitals in all of the provinces is noticeable. One hundred and eighteen new dispensaries for free treatment of the poor were added during the year. Six additional provinces, making 16 in all, were organized into sanitary divisions. There were 107 more municipalities with an organized service and 18 more qualified physicians as local health officers than there were at the beginning of the year.

The Rizal Memorial Hospital in Zamboanga was formally opened on Dec. 30, 1916. A hospital for contagious disease is now under construction in the city of Zamboanga. The Philippine Government and the Rockefeller Foundation have coöperated in fitting out a hospital ship in the islands for the purpose of extending medical assistance to the inhabitants of the Sulu Archipelago, which began service in November, 1917.

Efforts to reduce infant mortality have continued, and mothers are taking more interest in the care and welfare of their children. In Pasig alone, a town of about 14,000 inhabitants, over 100 babies less died than in preceding years. Fifty-seven women's clubs have been formed, devoted to the prevention of infant mortality, to the inculcation of better balanced diets, and to better housing for the people.

Commerce and Industries.—Philippine foreign trade continues to be affected by war conditions. Trade with the central countries of Europe has practically ceased and with France has fallen off very greatly. On the other hand, trade with the United Kingdom in 1916 was the largest since 1907, that with Japan increased approximately 25 per cent., that with the Dutch Indies doubled, probably due to the recent opening of a new line of steamers between Java and the Philippines *en route* to the United States, and that with the United States was the greatest on record on account of the large exportations of Philippine products (see also XIX, *External Commerce*). The total volume of foreign commerce was approximately 11 per cent. greater than for the preceding year or any other year except 1912.

The export total of $69,937,183 was by far the largest in the history of the Islands, which, however, is due more to increase in price than to increase in production. There was no increase in the production of hemp, but owing to the increase in price, its value was the greatest on record. There was a decided increase in the production of sugar and tobacco, and in articles representing the minor industries, such as embroideries and hat-making. During 1916, $1,164,012 worth of embroideries were exported, as compared with $187,651 during 1915. There was a decrease in copra, due, in part, to the increasing production of cocoanut oil in the Islands.

Imports for the calendar year 1916 were the smallest recorded since 1909, and were nearly $4,000,000 less than the figures of the previous year. This reduction was due to the difficulty in securing products, such as iron and steel manufactures, from the United States and to the increased local production of foodstuffs.

The year closed with a trade balance of over $24,000,000 in favor of the island, as shown in the following table:

Twelve months ending December	Imports		Exports	
	From the U. S.	From Other Countries	To the U. S.	To Other Countries
1913	$26,676,261	$26,636,525	$16,434,018	$31,338,938
1914	24,020,395	24,568,258	24,427,710	24,261,924
1915	26,381,069	22,931,114	23,653,211	30,159,793
1916	22,862,673	22,633,665	35,648,133	34,289,050

PORTO RICO

Economic and Political Conditions.—The year has been one of great progress in Porto Rico. The Governor reports:

> Prosperity has reached a higher level and is more general than ever before. There has been a general though varying increase in wages and there is less unemployment than at any time in recent years. There is more money in circulation, more activity in general business, more confidence in the strength and stability of the business situation than the island has ever known.

During the fiscal year 1917 20 new domestic corporations with a paid-up capital of $231,250 were organized and authorized to do business, and nine foreign corporations with a paid-up capital of $10,136,600 were officially registered during the same period and authorized to transact business. The Governor recommends the extension to Porto Rico of the rural-credits law. During the year 15.7 kilometers of new road were built, bringing the total of completed macadamized government roads up to 1,178.6 kilometers. The total expenditures for maintenance, repair and construction of roads and bridges was $493,428.85.

An epoch-making event in the political history of the island was the approval on March 2 of the new organic act (*A. Y. B.*, 1916, p. 242) for Porto Rico (see also I, *The Sixty-Fourth Congress*). This act was received throughout the Island with satisfaction, the people being especially pleased with the grant of United States citizenship. Since the entrance of the United States into the war and the enactment of compulsory military service, which is applicable to Porto Rico, the Porto Ricans have shown a commendable spirit of patriotism and loyalty to their new citizenship.

The third session of the eighth Legislative Assembly convened on Feb. 12 and adjourned on April 12. Fifty-four laws and 20 joint resolutions were passed, among the most important being a resolution authorizing the Governor to appoint a food commission and to borrow as much as $1,000,000, if necessary, to protect the people against the sufferings incident to the war. The work of this commission has resulted in prices being held down to as low a level as possible in the circumstances. A campaign for increased production of vegetables has been carried on with such success as to ameliorate greatly the present crisis.

Education.—The main efforts of the Department of Education were directed toward raising the standard of teaching and to adapting the course of instruction more nearly to the actual needs and abilities of the pupils. Real advance has been made in the quality of teaching and in instruction in agriculture, industrial arts and local industries. During the year 32 school buildings were constructed, and 49 were begun and are in course of construction; also 55 new sites for school buildings were acquired. The total expenditures for educational purposes were $2,106,389.18. The total enrollment was 152,063, which was 35.1 per cent. of the estimated population of school age; 2,676 teachers were employed, of whom 1,001 were men and 1,675 were women. The University of Porto Rico has had a successful year. The enrollment of students reached 1,174, being 124 more than the number enrolled during the previous year.

Sanitation.—Under the new organic act the sanitation service was converted into the Department of Health, as was also the supervision of the insane and the Blind Asylum, formerly under the old Department of Labor, Charities and Correction. Special attention has been given to remedying sanitary conditions in the municipalities and to combatting an epidemic of measles. This epidemic attracted fresh attention to the deplorable housing conditions in the congested districts of San Juan, and effort is being made to establish a system of government tenement houses for the improvement of this situation. The general mortality rate was the highest in seven years, reaching 28.5 per thousand. This condition was brought about largely by the high cost of foodstuffs, by a destructive drought which cut down the pastures and reduced the supply of milk, and by the destruction by a cyclone of plantain and banana trees, the source of a large part of the food of the poor.

Commerce and Industries.—The external trade in the fiscal year 1916-17 amounted to $134,516,141, which is about $29,000,000 more than the figures for the previous year, and the largest in the history of the island. Sugar exports increased in quantity about 15 per cent. and in value more than $8,000,000. There was an increase of about $6,000,000 in other articles, about $4,000,000 of which are accounted for in the items of tobacco, coffee and cigars. Cigars and tobacco recovered from the decline of 1915-16 and reached the highest level ever recorded. Imports increased from $38,951,156 in 1915-16 to $53,545,224. While a large part of the increase was due to the higher cost of articles imported, it was due, in part, to increased prosperity and greater purchasing power of the Porto Rican people. More than 91 per cent. of the external trade was carried on with the United States (see also XIX, *External Commerce*).

The total exports for the last three fiscal years are shown in the following table:

	1915	1916	1917
Sugar	$27,278,754	$45,809,445	$54,015,903
Coffee	7,082,791	5,049,283	5,892,081
Tobacco	8,987,870	8,587,852	11,723,712
Fruit	3,441,157	3,355,285	3,459,569
All other	2,566,335	3,929,708	5,879,652
Total	$49,356,907	$66,731,573	$80,970,917

AMERICAN SAMOA

Governor J. M. Poyer reports that the year 1916 was one of prosperity in American Samoa. There were no epidemics and health conditions were excellent. An earthquake, followed by a tidal wave, was felt in the Samoan group on June 25. No injuries resulted, but there was considerable damage of minor importance. Improved steamship service with the United States has resulted in an increase of nearly 600 per cent. in the volume of trade with the port of Apia.

The Samoan Hospital Training School for Native Nurses is a success and promises great good to the natives. There has been no change in the school system. A new government school, to cost about $12,500, is being constructed. The codification of the laws and regulations of the island government, begun in 1915, was completed. A portable wireless outfit for Manúa was installed on Dec. 22, 1916.

The contract price for copra was $103.52 per ton, as against $108.66 in 1916. The reduction was due to an increase of $5 per ton in the cost of transportation from Pago Pago to San Francisco. The amount of copra marketed during 1916 was 868 tons, for which the amount received was $94,297.21.

VIRGIN ISLANDS

Administration.—The negotiations leading up to the purchase of the Virgin Islands from Denmark were outlined in the YEAR BOOK for 1916 (p. 87). The exchange of ratifications of the treaty took place on Jan. 17 (see also II, *International Relations*). On March 3 Congress passed an act to provide a temporary government for the islands. The act appropriated the sum of $25,000,000 for the purchase of the islands and $100,000 for the purpose of taking over and occupying the islands and carrying the act into effect, and to meet any deficit in the revenues of the islands resulting from the provisions of the act. It provided that the military, civil and judicial power should be vested in a governor and such other persons as the President may appoint, and should be exercised in such manner as the President shall direct until Congress shall provide otherwise, provided that the President might assign an officer of the Army or Navy to serve as governor. It provided that the compensation of all persons appointed should be fixed by the President. It continued in effect the election laws and regulations and other local laws, and provided for their administration by the civil officials and the local judicial tribunals as theretofore established. It provided that all cases arising in the islands and therefore reviewable by the courts of Denmark should be reviewable by the Circuit Court of Appeals for the Third Circuit. It provided that the duties and taxes collected under the act should be used and expended for the government and benefit of the islands under rules and regulations to be prescribed by the President. It provided that until Congress should otherwise provide all laws imposing taxes, including the customs laws and regulations, should continue in force and effect, except that articles the growth, product or manufacture of the United States should be admitted free of duty. It provided that on the exportation of sugar to a foreign country or its shipment to the United States or any of its possessions there should be paid an export duty of $8 per ton in lieu of any export tax theretofore imposed. On imports from the islands into the United States it imposed the same duty as on articles imported from foreign countries, with the proviso that if such articles were the growth, product or manufacture of the Islands, they should be admitted free of duty into the United States.

The purchase price was paid March 31 to the Danish Minister at Washington, and on that date the islands were formally taken over by the United States Government, Commander Edwin T. Pollock, U. S. N., commanding the *Hancock*, officiating as the senior officer present. Commander Pollock acted as governor until April 9, when Rear-Admiral James H. Oliver assumed his duties as governor.

General Conditions.—On Aug. 1, Governor Oliver reported that there were many grave problems to be faced in the most elementary improvement of the present conditions in the islands, with particular reference to sanitation, hygiene, public morality and finance. The most important need is a complete installation of a sanitary system and a comprehensive arrangement for medical attention. The death rate is very high. There is urgent need for additional physicians and hospital nurses. The existing system of public instruction is altogether inadequate, and there is no money available for improvement. There is no trade, normal or agricultural training school.

The roads throughout St. Croix are fair, while the reverse is true on St. Thomas and St. John. The only agricultural interest of importance has been the growing of sugar cane on St. Croix. The area of land in sugar cultivation varies from about 10,000 to 14,000 acres. At the time of the transfer of the islands there were practically no food crops grown with the exception of a small quantity of yams and sweet potatoes. Efforts to encourage the growing of vegetables have met with some success.

The unit of the monetary system is the franc, the value of five francs being equal to one West Indian dollar. The Governor does not recommend the changing of the currency system now established on the Islands to conform with that of the United States at this time.

Aside from the installation of a sanitary system, which necessarily calls for a system of water supply, the Governor recommends the following:

Revision of the tax system,
Reorganization of the judiciary,
Revision of the existing local laws,
Survey of the islands,
Appropriations of $39,540 to meet the running expenses of the Government up to March 31, 1918, and of $453,860 for the 15 months ending June 30, 1919. These amounts do not include the large expenditures necessary for improvements in health and sanitary conditions and education.
That the extension of the franchise be left with the local government and not changed until after further study.

The Governor thinks there is no immediate necessity for improving St. Thomas Harbor.

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VIII. LAW AND JURISPRUDENCE

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FOREIGN JURISPRUDENCE

Legislation.—The character of legislation in all countries has been affected by the war. Canadian legislation, like legislation in the United States, abounds in war features (see III, *Canada*). Even before Brazil broke off diplomatic relations with Germany, her Congress had found the problems growing out of the war more engrossing than those arising from domestic affairs (see III, *Latin America*). France has found it necessary to provide for supervising by the "Ministre du Travail" the business of reinsurance, which before the war was made by foreign companies and mostly by German and Austrian insurers. By a law of March 18, 1917, an alien woman shall not become a French subject by marriage with a Frenchman unless leave to celebrate the marriage is granted by the Minister of Justice, this change in Article 12 of the Civil Code being made to prevent such women from escaping the disabilities and supervision to which alien enemies are subject. By decree of March 17, 1917, a further extension of the moratorium for 90 days was granted on negotiable instruments drawn before Aug. 4, 1914.

Great Britain has found it necessary to amend her Trading with the Enemy Act several times; by 6 and 7 George V, Chapter 52, the law is made more effective in point of administration and more severe in its penalties. By Chapter 51 the use of
p e word "Anzac" is prohibited as a
the e name without the authority of
effect, lonial Secretary given on the
revenues of the Government of Aus-
the provision New Zealand. Chapter
that the mili suspends the summon-
power should be ries during the war
and such other p hs after the termina-
dent may appoint,

tion thereof. By Chapter 6 a Ministry of National Service was created to "make the best use of all persons, whether man or woman, able to work in any industry, occupation or service." By Chapter 19, the number of jurors at coroners' inquests is reduced from 12 to seven and from 23 to 11, while Chapter 20 makes provision for the billeting of persons engaged in work of national importance for the purposes of the war.

Nearly all the laws, regulations and proclamations reported from Germany deal with matters incident to the war, notably in connection with foods and war materials. The ordinance of Dec. 16, 1916, relating to the annulment of contracts with enemy subjects is discussed and compared with German law before the war in *International Law Notes* (ii, 5). An ordinance of Dec. 21, 1916, prohibits all transfers of shares or interests in German shipping to foreigners or to German subjects not permanently resident in the Empire.

Japan followed the example of her European allies and enemies in enacting an elaborate ordinance forbidding transactions with enemies (No. 41, April 23, 1917). New Zealand vests enemy property in the Public Trustee of the Dominion as the custodian thereof. Sweden has deemed it necessary to restrict the acquisition of real property or of interests in mines by foreigners (1 *Int. Law Notes*, 148). Switzerland has imposed a war profits tax of 25 per cent. (*ibid.*, 189).

Most neutral states and many of those at war have found opportunity for increasing the volume of ordinary legislation. Important codifications are reported from Argentina (workman's compensation, 1 *Int. Law*

Notes, 169), from Brazil (a new civil code, 2 *ibid.* 44), from Bolivia (a new patent law, 2 *ibid.* 72), and from Japan, the latter a simple insurance law (3 *Am. Bar Assoc. Jour.* 286,) under the provisions of which the Government insures any person to the extent of $125. France has legalized the practice of crossed checks by *agents de change* as well as by bankers (Jan. 26, 1917), and has modified the law of guardianship so as to allow any woman to act as tutor or guardian (March 20, 1917). The domestic legislation of Great Britain not connected with the war is of small volume. Its most important items are a recodification of the law of larceny (6 & 7 George V, Ch. 50) and the Registration of Business Names Act (*ibid.* Ch. 58). A royal ordinance of Sweden came into force on Dec. 1, 1916, relating to patents and trade marks which have been secured by foreigners in their own countries.

Judicial Decisions.—Litigation, like legislation, has been affected in every country by the War. Even the courts of neutral states have been compelled to consider not only questions in international law, but also the effect of the war upon contracts to which their citizens were parties, and to deal with novel situations which world-wide hostilities have created. The cases reviewed in the following sections may be taken as typical of this class.

Novel Questions Raised by the War.—The novel legal problems for courts in the belligerent countries are numerous. One of the most perplexing of these came before the Belgian courts. The Court of Appeals of Brussels and the Court of Appeals of Liège had rendered conflicting decisions and the matter was taken to the Court of Cassation. The German Governor-General for the occupied part of Belgium had issued in 1915 a decree creating courts of arbitration and modifying the jurisdiction of existing Belgian courts. It was held that he had the legal right to do this in case the decree was necessary to restore and ensure, as far as possible, public order and safety, and only in such case, but that the Belgian tribunals could not inquire into the necessity for the decree. Under the pledge given by Belgium in treaties and in compliance with her national law, which are set forth in the opinion of the Court of Cassation, Belgium tribunals would encroach upon the prerogative of the competent national authority if they undertook to pass upon the necessity of these legislative acts of the German Governor-General and their decisions would be *ultra vires*. The result of this decision is to leave the powers of the German Governor-General unlimited by an appeal to judicial tribunals. But the Court of Cassation declared it is so unlimited, not because "the occupant exercises the legislative power of the occupied territory by reason of his strength, nor because these measures are the orders of a foreign military authority, or that they possess the virtue of having in themselves any legal effect although not assented to by the legal authority, but solely because it is so ordered by a Belgian law." This decision satisfies at once Belgian pride and German greed. (1 *Int. Law Notes* 136.)

Whether a company formally organized in the jurisdiction of one belligerent but whose business is owned and controlled by the citizens of an enemy country may bring actions to enforce its claims in the former state has received a negative answer both in Great Britain (Daimler Co., Ltd., *vs.* Continental Tire & Rubber Co., 1916, 2 A. C. 307; 32 L. T. 624) and in Italy (1 *Int. Law Notes* 152). The Italian court held that the Società Italiana Ganz Elettricità was a crass case of simulation, having been organized as a joint-stock company in Italy as a mere legal fiction for the convenience of the Austrian Ganz company of Budapest. The decision has been criticised by Professor Fedozzi of Genoa, both as preventing enemy capital from seeking investment in Italy and as being inconsistent with the principle that a company has a judicial individuality distinct from that of the physical persons of its members. That war dissolves a partnership composed of citizens of belligerent countries is not to be doubted, but in case of dissolution is it the duty of the partner in the country where the firm is doing business to wind up the firm's affairs and hold the enemy partner's share for him until the end of the war? The British Court of Appeals answered this question in the affirmative and reversed the contrary decision of the lower court (Hugh Stevenson & Sons, Ltd., *vs.* Aktiengesellschaft für Cartonwagen Industrie, 1917, 86 L. J. K. B. 516; 1 K. B. 842).

Trading with the Enemy.—All of the belligerents have drastic laws against trading with enemies. In Great Britain the courts have uniformly so construed these statutes as to prevent evasion and to stop the payment of money to persons in enemy countries (*In re* Kastner Co., Ltd., 1917, 1 Ch. 390, 86 L. J. Ch. 235). They look behind the formal organization and registration of a company to see who controls it. If they find that enemy shareholders are the controllers and beneficiaries, they hold it to be an enemy company. But if the control is in the hands of citizens and the business is carried on for their benefit, it is not an enemy company, although a minority of its shares may be owned by enemy subjects (*In re* Hilckes; Muhesa Rubber Plantations, Ltd., *ex parte*, 1917, 1 K. B. 48, 86 L. J. K. B. 204).

In Everett *vs.* Swayne & Hoyt, Inc., the United States Court for China decided that the British Trading with the Enemy Act did not justify the defendants in refusing to carry goods for the plaintiff. The defendants were an American corporation acting in China through English agents who were bound by the British legislation. It was ruled that the defendants should have had agents who were not subject to such legislation. (3 *Am. Bar Assoc. Jour.*, 276.)

The English courts are not disposed to give a loose construction to the Hague Convention articles so as to exempt enemy property from confiscation.

In the *Germania* case (1917, 1 A. C. 375, 86 L. J. P. 94) the Privy Council affirmed the decision of the Admiralty Court (1916, P. 5, 85 L. J. P. 74) holding that the racing yacht of Gustav Krupp von Bohlen of Essen was not a merchant ship within the meaning of the Hague Convention but was liable to seizure in an English port upon the outbreak of war and to confiscation as enemy property.

Defense of the Realm.—The extent to which the Defense of the Realm Act has limited the liberty of alien friends in Great Britain is shown in Rex *vs.* Brixton Prison; *ex parte* Sarno (1916, 2 K. B. 742; 1917, 86 L. J. K. B. 62), when a Russian subject was ordered deported upon suspicion of being a criminal. Lord Chief Justice Reading voiced the opinion that "things happen in time of war which could not happen in times of peace, and that in time of war mere suspicion may justify action which could not be justified in time of peace," an opinion closely resembling that expressed by President Wilson in a letter to the editor of *The Masses*, that "things which are innocent in time of peace may be very dangerous to the public welfare in the time of war."

This doctrine was applied in London Corporation *vs* Wolff, sustaining the licensing authorities in refusing a license for an employment agency to one Wolff, a naturalized subject of German origin, as an unsuitable person, although there was not the slightest ground for any suggestion against his character or his loyalty and the agency was a charitable institution for obtaining positions for naturalized Germans, Austrians and Hungarians. "In times of peace," said the Lord Chief Justice, "no one would suggest that the respondent was unsuitable, but in time of war it is a different matter." Opinions of a similar nature were expressed by Lord Reading in Kaye *vs.* Cole, when applying the Defense of Realm Act to the case of an Oxford student charged with discouraging recruiting.

Property and Contracts.—Requisition of property for government use in time of war has subjected property rights to serious inroads. In Modern Transport Co., Ltd., *vs.* Duneric Steamship Co., Ltd., (1917, 1 K. B. 370, 86 L. J. K. B. 164) the British Government requisitioned the *Duneric*, then in possession of a charterer, and paid him for its use only one-half the amount which he had bound himself to pay the owner. It was held that the requisition did not suspend the charter party or affect the rights of owners or charterers under it, following Tamplice Steamship Co. *vs.* Anglo-Mexican Petroleum Products Co. (1916, 2 A. C. 397, 85 L. J. K. B. 1389). Accordingly the charterer was compelled to pay the owner some $43,000 more than he received from the Government.

Other cases in the English courts in which war has seriously affected the rights and obligations of contracting parties relate to the impossibility of performance, as in St. Enoch Shipping Co., Ltd., *vs.* Phosphate Mining Co. (1917, 86 L. J. K. B. 74; 1916, 2 K. B. 624); to the prohibition upon the raising of rents by landlords, as in Sharp Brothers & Knight *vs.* Chant (1917, 1 K. B. 771, 86 L. J. K. B. 608); and to the stoppage of work on reservoirs, as in Metropolitan Water Board *vs.* Dick, Kerr & Co., Ltd. (1917, 2 K. B. 1, 86 L. J. K. B. 675).

Military Service.—The numerous cases in which liability to military service has been adjudicated in British courts show two things, first, that the decisions of military officers are often reviewable and reversible by civil tribunals, and second, that not every British citizen is a patriot. Of the first class is Towler *vs.* Sutton (1917, 86 L. J. K. B. 46), where a recruiting officer rejected an applicant for enlistment because the applicant was an atheist and declined to take an oath, though offering to affirm. Later the officer secured the atheist's conviction as an absentee from service. The latter appealed and his appeal was sustained. Another example is afforded by *Ex parte* Burns, where an applicant for military service was rejected by the doctor but was later notified by the military authorities to appear for service. It was ruled that if such notice was followed by his arrest he could apply to the civil courts for a writ of prohibition against the military authorities. Still another example is Offord *vs.* Hiscock, where the Court of King's Bench quashed a conviction which had been secured by a recruiting officer. The relation of the military and civil authorities in these cases is thoroughly discussed in Rex *vs.* Wiltshire Tribunal, *Ex-parte* Thatcher (86 L. J. K. B. 121), where the Military Service Act and the regulations under it are fully set forth, as they are in Rex *vs.* Hertfordshire Appeal Tribunal, *Ex parte* Hills.

Of the second class, that is, cases dealing with the applications of slackers, are the following: Rex *vs.* Yorkshire Appeal Tribunal, *Ex parte* Barker, where Barker's notice of appeal from a refusal to grant him exemption is characterized as incoherent and nonsensical; and Kipps *vs.* Lane, where a member of the International Bible Students Association claimed that he was denied exemption as a regular minister of a regular religious denomination.

A nuncupative will of a soldier was established by the affidavit of a brother officer in In the Goods of Wardrop (1917, P. 37, 86 L. J. P. 37).

Aircraft Destruction.—The destruction of buildings by aircraft bombs is a loss resulting from an exercise of military power and relieves the insurer from liability under a policy containing the usual exemption clause (Enlayde, Ltd. *vs.* Roberts, 1917, 1 Ch. 109, 86 L. J. Ch. 149; R. H. & S. Rogers, Ltd., *vs.* Whitaker, 1917, 1 K. B. 942, 86 L. J. K. B. 790).

A brief sketch of the famous Falkland Island Battle is found in *Ex parte* H. M. S. Canopus, (1917, P. 47, 86 L. J. P. 48). The officers and crew of the *Canopus* claimed a share of 12,000 pounds awarded as prize bounty for the destruction of the German war ships in the battle. The claim was denied on the ground that the Naval Prize Act limited the bounty to officers and crews actually present and taking part in the destruction of the enemy ships, although the *Canopus* had been the means of giving Admiral Stundee sufficient warning to make steam, to cast off colliers and to leave in pursuit of the enemy, and although the shot from the *Canopus,* while at anchor at Port Stanley had probably damaged one of the German war ships.

Prizes.—Questions of prize are many in the decisions of the Probate, Divorce and Admiralty Division, and yet they do not greatly outnumber the actions for divorce and for the construction of wills. In the *Balto* case (1917, P. 79, 86 L. J. P. 83) it was held that under the doctrine of continuous voyage contraband goods may be seized while on their way to a neutral country if there exists an intention to send them to an enemy destination after manufacture.

Privy Council.—One cannot read the cases before the Privy Council without noting the world-encircling extent of the British Empire and the astonishing variety of legal questions that come before the final Court of Appeals from these wide-flung dominions. In the first eight numbers of Vol. 86 of Law Journal Reports are appeals from Alberta, Australia, Bechuanaland, Ceylon, Gibraltar, India, Newfoundland, Nova Scotia, Ontario, Quebec, Queensland, Saskatchewan, and the Straits Settlements. These cases involved the application of common law, and the rules of Mohammedan law, as well as of colonial constitutions. (Commercial Cable Co. *vs.* Newfoundland, 86, L. J. P. C. 19) and statutes (Thetford Mines Corporation *vs.* Amalgamated Asbestos Corporation, Ltd. *ibid.* 7), and Codes of Evidence (Mahomed Syedol Affrin *vs.* Yeoh Ooi Gark, *ibid.* 15). In the last cited case it was held to be the duty of the Court, in the construction of the Evidence Ordinance of the Straits Settlements, to accept, if possible, the illustrations given as being both of relevance and value in the construction of the text.

Workmen's Compensation.—The Workmen's Compensation Acts continue to give the English courts much trouble. The *Law Journal Reports* for the first eight months of 1917 contain no less than 31 reported cases under these statutes. In Oates *vs.* Thomas Turner & Co. (1917, 86 L. J. K. B. 24) the court had to decide whether a jobbing grinder who rented power from master cutlers for such work in their shop as they gave him to do and who was allowed by them, when they had no work for him, to do work for others was their servant when engaged in such work for others. The trial judge found that he was, but the Court of Appeals held that he was not. Several of the cases turned upon the question whether proper notice had been given by the injured workman to the employer. In Wardle *vs.* H. G. Enthoven & Sons, Ltd., (1917, 86 L. J. K. B. 309) the accident was held not to have arisen out of the employment, although the workman believed it was his duty to incur the risk which resulted in his injury. A majority of the decisions turn upon the language of the statutes or upon questions of fact. It is worth noting that these Acts have not resulted in diminishing the volume of litigation arising from industrial accidents.

Sale of Goods.—A number of interesting cases relating to the sale of goods are reported. The Olympic Oil and Cake Company *vs.* Produce Brokers Co. (1917, 1 K. B. 320, 86 L. J. K. B. 421) decides that a seller can make a valid appropriation to his buyer of goods which have been shipped to him, with the knowledge that the goods have been lost at sea. It also deals with the question of how far a mercantile custom can modify the terms of a written contract. Moreover, it illustrates the possibility of keeping up litigation even in England. Lord Chief Justice Scrutton closes his opinion with the remark: "This is the sixth hearing in the High Court, and I hope it will be the last; but still there are possibilities." He took occasion, also, to refer to the case as "a terrible example of the disadvantage of combining a commercial arbitration (which was provided for in the sale contract) with proceedings in the courts;" adding that "in this particular trade, in the year 1913, over 6,000 disputes were disposed of by commercial arbitration in the city of London alone." The case at bar was thus disposed of, only to be brought into the courts for years of litigation. In Harrison *vs.* Micks, Lambert & Co. (1917, I. K. B. 755, 86 L. J. K. B. 573) an importer of wheat had sold part of a cargo and offered the remainder of "about 5,400 quarters" to defendants, who contracted to buy it. It turned out that the remainder was 5,974 quarters, and the buyer refused to take that amount. It was held that he was obliged to accept, as the ruling words were "the remainder of the cargo", not the words "about 5,400 quarters." Blagdon Coöperative Society *vs.* Young, shows that though a seller of "blackberry jelly," who is not its manufacturer, may be liable to the buyer on the warranty that the article is not adulterated, he is not punishable for a criminal violation of pure-food laws unless he had reason to believe that it was adulterated. Roe *vs.* R. A. Naylor, Ltd., (1917, 1 K. B. 721, 86 L. J. K. B. 771) shows the folly of accepting a written contract without reading it. In this case the buyer of goods accepted a sold note from the seller without observing the clause, "Goods are sold subject to their being on hand and at liberty when the order reaches the head office." As the sold note was accepted as constituting contractual terms, the buyer was bound by its provisions unless he proved that the objectionable clause was so placed and printed that a reasonable man exercising reasonable care in reading the document would not have observed it. Bowen *vs.* Jones, sustains the conviction of a person who sold milk containing less than three per cent. of milk fat, the defendant having failed to prove that the deficiency was due to the cows and not to watering.

Master and Servant.—A servant implicitly engages not to reveal secret processes of his master's manufactures and will be enjoined from making such revelations to his master's detriment (Appleton Rubber Co. *vs.* Manning). When a servant who is under a duty to design the best method of carrying out certain work of the company discovers a method and takes out a patent therefor, he holds the patent as trustee for his employer (British Reinforced Concrete Co. *vs.* Lind). Compulsory pilotage does not make the Government liable for the torts of the pilots though they are appointed and paid by it. The Government is not the principal in the piloting of ships, with the pilots as its servants; on the contrary, the pilot is an independent professional man, discharging his skilled duties (Fowler *vs.* Eastern &c. Co., Ltd., 1917, 86 L. J. P. C. 29).

Banks' Liability for Raised Cheques.—A Bank's liability for paying a raised cheque received careful consideration in Macmillan and another *vs.* London Joint Stock Bank, Ltd. (1917, 1 K. B. 363, 86 L. J. K. B. 694). The plaintiffs had in their employ a clerk whom the court found they properly trusted. He presented a cheque for £2 for petty cash to one of the partners, who signed it. The clerk then raised the cheque to £120, presented it to defendant bank, on which it was drawn, received the cash and absconded. The court held that the cheque was a forgery, that plaintiff was not negligent in the matter, and that they were entitled to recover £118 from the bank. Young *vs.* Grote (1827, 4 Bing 253) is referred to by the court as a case which cannot be usefully cited as an authority. Such is the view generally entertained of that much cited and greatly criticized case in American courts.

Trade Names.—Trade names continue to be a fruitful source of litigation. Horlick's Malted Milk Co. sought to enjoin a rival from selling a similar article under the name of Hedley's Malted Milk, but failed. "Malted milk" is a descriptive term, and there was no evidence that the public was misled into buying Hedley's milk for Horlick's. In Williams & Co.s', Ltd., the application to register the word "Chocaroons" as a trademark was denied. Although an invented word and not calculated to deceive, it denominated a particular kind of sweetmeat which everybody had the right to make, and was not used for the purpose of indicating that the goods were those of the applicant. William Crawford & Sons, Ltd., failed to receive the registration of their surname as a trademark, because it was not so uncommon as to be a distinctive mark, as required by the English Trademark Act of 1905 (1917, 1 Ch. 550, 86 L. J. Ch. 325). Ewing, trading as the Buttercup Dairy Co., had little difficulty in convincing the court that a rival ought not to carry on his business in the name of the Buttercup Margarine Co. Accordingly, defendant was enjoined from using that name, as it was calculated to divert customers from plaintiff, and induce the public to suppose that defendant was a branch of plaintiff's business (1917, 2 Ch. 1, 86 L. J. Ch. 441).

Libel.—Privileged occasion in libel received very full consideration in Adams *vs.* Ward (1917, 1 A. C. 309, 86 L. J. K. B. 849). It is somewhat surprising that each of the five law lords who sat in the case thought it necessary to write elaborate opinions to show that the occasion was privileged and that there was no evidence of express malice. However, these opinions, notably that of Lord Loreburn, contain admirable statements of the legal rules applicable to the case.

Miscellaneous Decisions.—An automobile is subject to a lien for repairs, although these are ordered by one who is the bailee under a hire-purchase contract, and not by the owner (Greene *vs.* All Motors, Ltd., 1917, 1 K. B. 625, 86 L. J. K. B. 590). Gas pipes laid under public streets are land within the meaning of a statute which defines land as "including a right or interest in, and easement over, land" (Toronto Corp. *vs* Consumers' Gas Co. of Toronto, 1917, 1 A. C. 84, 86 L. J. P. C. 45). Professional money lending is deemed a dangerous business in England, and those engaged in it are not allowed to carry it on at any place but their registered address (Finegold *vs.* Cornelius, 1916, 2 L. B. 719; 1917, 86 L. J. K. B. 1). It is negligence to take along a highway a colt loose and not under control; one so doing is liable in damages to a bicyclist who is knocked down by the frightened colt (Turner *vs.* Coates, 1917, 1 K. B. 670, 86 L. J. K. B. 321). When a person at the request of another does an act on his behalf which is apparently legal, but which injures a third party, for which the other is liable, the latter is entitled to indemnity from the person requesting the act (W. Cory & Son, Ltd. *vs.* Lambton, 1917, 86 L. J. K. B. 401). An action by a wife for recision of a deed of separation from her husband, on the ground that she has been induced to execute it by the alleged false and fraudulent misrepresentation of her husband as to the amount of his means, is not one for tort (Hulton *vs.* Hulton, 1917, 1 K. B. 813, 86 L. J. K. B. 633).

AMERICAN JUDICIAL DECISIONS

CONSTITUTIONAL LAW

Interstate Commerce.—Probably the most discussed judicial decision of the year was that in which the U. S. Supreme Court, though divided five to four, upheld the Adamson Eight-Hour Act of Sept. 3 and 5, 1916 (*A. Y. B.*, 1916, pp. 446, 548; 39 Stat. 721, Ch. 436). The majority of the Court found no difficulty at all in upholding the statute as a legislative establishment of an eight-hour day on interstate railroads, the Chief Justice declaring that "the authority to permanently establish it is so clearly sustained as to render the subject not disputable." Nor do the other justices seem to dissent from this proposition; they simply deny that the purpose of the statute was to establish an eight-hour day, and it was when supporting the statute as a regulation of wages that the majority of the Court was unable to convince the minority justices of its constitutionality. Its constitutionality as a wage-fixing statute was not upheld under any general legislative power to fix wages, but solely on the ground that by the Federal Constitution Congress has been given power over interstate commerce to preserve it, and that any act necessary to its preservation is a constitutional regulation. It is important to notice also that the majority speak of the statute "as the exertion by Congress of the power which it undoubtedly possessed to provide by appropriate legislation for compulsory arbitration." This is a most important declaration. (Wilson *vs.* New, 243 U. S. 332, 37 Sup. Ct. Rep. 289.)

Another decision of great importance is that upholding the Webb-Kenyon Act of March 1, 1913 (*A. Y. B.*, 1913, pp. 3, 400; 37 Stat. 699), prohibiting the interstate shipment or transportation in any manner of any intoxicating liquor which "is intended by any person interested therein, to be received, possessed, sold or in any manner used, either in the original packages or otherwise, in violation of the law of such State, Territory or District of the United States." That a state, under its police power, can constitutionally forbid the sale and manufacture of intoxicating liquors within its territory is clear, but for it to forbid the interstate shipment of such liquor into its territory has been declared by the U. S. Supreme Court to be an attempt directly to burden interstate commerce and an unconstitutional interference with the power of Congress to regulate such commerce. But Congress, the Court declares, under its authority over interstate commerce, may entirely prohibit the interstate shipment of intoxicating liquor; and if it may entirely prohibit, it may conditionally prohibit, making the condition the action to be taken by the several states. This is what the Webb-Kenyon law aims to accomplish, and it is, therefore, constitutional. (Clark Distilling Co. *vs.* Western Maryland Railway Co., 242 U. S. 311.)

The White Slave Act of June 25, 1910 (36 Stat. 825), has been passed upon in two cases of interest during the year. It has been declared by the U. S. Supreme Court to be an offense under the statute to transport a woman from one state to another for immoral purposes, though pecuniary gain is not a motive nor an element in the transaction (Caminetti *vs.* United States, 242 U. S. 470). The defendants strongly contended that the statute had to do only with commercialized vice, and this view was taken by the three dissenting members of the Court. The Circuit Court of Appeals for the Fourth Circuit has declared by a vote of two to one that the offense created by the statute is not committed where a man procures the transportation of his mistress from one state to another so that she may in the latter be delivered of a child of which he is the father, although he in fact had intercourse with her the night after they reached the second state, since the purpose of the transportation was not that of prostitution (Van Pelt *vs.* United States, 240 Fed. 346).

Three opinions of the U. S. Supreme Court handed down on the same day go far to define the scope of the Federal Employers' Liability Act of April 22, 1908 (Comp. Stat. 1916, Sec. 8657), and of similar state statutes. In one case it was declared that the Federal statute does not apply to steamship lines plying between the states though owned by an interstate railway company, but it was also declared that neither may the state statute be applied to injuries on such lines occurring within the state, since this would conflict with the admiralty jurisdiction which by the Constitution and laws of the United States has been vested in the Federal courts. On the second point four of the justices vigorously dissented, and it is interesting to note that on this point Congress has upheld the minority by amending the Judicial Code relating to the jurisdiction of Federal district courts so as to save to claimants the rights and remedies under the workmen's-compensation statutes of the states. In the two other cases it was determined that the Federal Employers' Liability Act was intended to cover the whole field of employers' liability for injury in interstate commerce although it only imposes liability when negligence is imputable to the employer, and that, therefore, a state statute imposing liability when negligence is not imputable to the employer is not applicable when the injured employee was at the time of injury engaged in interstate commerce.

Police Power.—An Oregon statute (Laws of 1913, Ch. 102) provides as follows:

> No person shall be employed in any mill, factory or manufacturing establishment in this state more than 10 hours in any one day, except watchmen and employees when engaged in making necessary repairs, or in case of emergency, where life or property is in imminent danger; provided, however, employees may work overtime not to exceed 3 hours in any one day, conditioned that payment be made for such overtime at the rate of time and a half of the regular wage.

The constitutionality of this statute was upheld by the U. S. Supreme

Court by a vote of five to three. The attack on the statute was principally directed against the last clause, on the ground that this made the statute one of wage regulation. This the majority denied, holding that the purpose of the statute was to fix a ten-hour day, the last clause being introduced to penalize employment for longer hours while allowing some elasticity. As a regulation of hours the majority of the Court held the statute to be a constitutional exercise of the police power. (Bunting *vs.* Oregon, 243 U. S. 426, 37 Sup. Ct. Rep. 435.)

Another Oregon statute (Laws of 1913, p. 92) declares it to be unlawful to employ women or minors for unreasonably long hours, or in unhealthful surroundings, or "for wages which are inadequate to supply the necessary cost of living and to maintain them in health," and created a commission with power to establish standards of hours, standards of working conditions and standards of minimum wages for women and minors. The Industrial Commission, acting under this statute, established $8.64 as the minimum weekly wage for an experienced adult woman worker in factories in Portland. The Supreme Court of Oregon held this statute constitutional as health legislation under the police power, declaring that a minimum living wage was as necessary to health as reasonable hours, and that women and minors were in many cases not getting a living wage and therefore needed legislative protection in this regard. The case was carried to the Supreme Court of the United States, and the judgment of the state court was affirmed by an equally divided court. (Stettler *vs.* O'Hara, 69 Ore. 519; affirmed 243 U. S. 629, 37 Sup. Ct. Rep. 475.)

"Blue-sky laws" of Ohio, South Dakota and Michigan have been passed upon by the U. S. Supreme Court during the year and held constitutional, only one justice dissenting. It was declared that in requiring dealers in securities to obtain licenses and in giving to an administrative officer the authority to revoke licenses on certain grounds named, the statutes were within the police power to protect the public from fraud, and so were constitutional and not within the prohibition of the Fourteenth Amendment. (Hall *vs.* Geiger-Jones Co., 242 U. S. 539; Caldwell *vs.* Sioux Falls Stock Yards Co., 242 U. S. 559; Merrick *vs.* Halsey, 242 U. S. 568.)

In 1905 a sales in bulk law was declared by the New York Court of Appeals to be unconstitutional under both the Federal and the state constitution (Wright *vs.* Hart, 182 N. Y. 330), but a similar statute has now been held constitutional by the same tribunal, overruling the earlier decision. As far as the Federal constitution is concerned, this was made necessary by the intervening declaration by the U. S. Supreme Court that such legislation is not in conflict with the Federal Constitution. The change in attitude with regard to the state constitution was admittedly influenced by the fact that the courts of 20 states had held similar statutes valid under their constitutions, disproving the argument that such legislation is unnecessary and sporadic. (Klein *vs.* Maravelos, 219 N. Y. 383.)

The U. S. Supreme Court has held unconstitutional a statute of the State of Washington which made it a criminal offense for employment agencies to receive any fee from those seeking employment. The Court held that this was not a reasonable exercise of the police power—that the business might be regulated but was not illegal so that it could be prohibited, which would practically be the result of the legislation under consideration.

The Supreme Court of North Carolina has declared that a statute of that state (Revisal 1905, Sec. 1041) providing that a chattel mortgage by a husband on the household furniture shall be void unless the wife joins therein is not unconstitutional as interfering with the husband's *jus disponendi*, but is a valid exercise of the police power. (Thomas *vs.* Sandlin, 91 S. E. 1028.)

Workmen's Compensation.—Three forms of state workmen's compensation statutes have been considered and upheld by the U. S. Supreme Court during the year. By the New

York statute (Laws of 1913, Ch. 816, as amended by Laws of 1914, Chs. 41 and 316; *A. Y. B.*, 1913, pp. 55, 432; 1914, p. 436) waiver of the right to compensation under the act and assignment or release of claims are forbidden. The employer must secure compensation by insuring its payment through a state fund or through an approved insurance company, or by satisfactory proof to the Workmen's Compensation Commission, including deposit of securities when required, of his ability to pay such compensation himself. If he fails to secure such payment, the employee, if he desires, may bring a common-law action for damages, and the employer may not set up as a defense contributory negligence, negligence of a fellow servant or assumption of risk. The Court held that there is no property right in rules of law, and it is therefore not unconstitutional to take away defenses of contributory negligence, fellow-servant's negligence and assumption of risk. In imposing an absolute liability upon employers and in forbidding contracts waiving right to compensation, there is not an unconstitutional taking of property or interference with the right to contract, for these provisions are a proper exercise of the police power to protect the employer from exorbitant recoveries, the employee from costly litigation, and the public from the burdens ordinarily incident to industrial accidents. The method of insuring compensation under the statute was held to be reasonable, and so did not transcend the police power. (New York Central Railroad Co. *vs.* White, 243 U. S. 188, 37 Sup. Ct. Rep. 247.)

The Iowa statute (Iowa Laws, 35 Gen. Assem., Chap. 147) contains an elective feature, giving the employee the right to choose upon entering an employment whether he will stand on the statute or on the common law, with careful provisions to protect him from coercion. It also provides that if the employer does not provide for compensation according to the terms of the act, it shall be presumed that the injury was the direct result of his negligence, and he shall have the burden of rebutting this presumption. In view of the decision in the preceding case, the Iowa case was quickly disposed of, as raising no essentially different questions of constitutional law. (Hawkins *vs.* Bleakly, 243 U. S. 210, 37 Sup. Ct. Rep. 255.)

The Washington statute (Laws of 1911, Ch. 74), considered in the third case, is compulsory and not elective in case of hazardous industries, and by its terms the employer is compelled to contribute to a state fund for the compensation of employees. The statute was specially attacked because of this last provision, since it compels contribution by the employer whether injuries befall his employees or not. It was declared by the Court, four justices dissenting, that compensation for injuries in such industries as are enumerated is of such public importance as to justify the employment of the state as the agency through which it is to be effected, and it is not unreasonable to put upon a class of business the burden of compensating for injuries in that business, as is done by this statute, when it is of public concern that such compensation shall be made. (Mountain Timber Co. *vs.* Washington, 243 U. S. 219, 37 Sup. Ct. Rep. 260.)

Full Faith and Credit.—The U. S. Supreme Court has declared that the rule that personal property of an intestate has its situs at his domicile and is subject to administration and devolution according to the domiciliary laws is merely a rule of the common law which a state may adopt, modify or reject, and that each state has the power to control the personal assets of an intestate within its borders. No state by an action *in rem* can fix the status as to administration or the rules for devolution of personal property situated in another state, and no state by action *in personam* can fix the domicile of a deceased or the devolution of his personal assets as against one not within the jurisdiction and who does not appear in the proceedings, and such action is not entitled to full faith and credit under the Federal Constitution. (Baker *vs.* Baker Eccles & Co., 242 U. S. 394.)

Separation of Powers.—The question whether a court may suspend sentence in a criminal case during good behavior so as permanently to exempt from punishment, is one as to which different opinions have been expressed by state courts. The right has been denied by the U. S. Supreme Court, that tribunal declaring that there is no such right inherent in a court of law, but that the right to create crimes and establish punishments is under the Federal Constitution a legislative right. As a result of this decision President Wilson granted some five thousand pardons to persons who had been released under suspended sentences by Federal Courts. (*Ex parte* United States, 242 U. S. 27.)

H. Snowden Marshall, U. S. District Attorney for the Southern District of New York, presented evidence to a grand jury tending to show that certain persons, including a member of Congress, were in the pay of the German Government and engaged in fostering acts of violence in the United States (*A. Y. B.*, 1916, p. 23). The accused Representative obtained the appointment of a committee of the House of Representatives to investigate the proceeding of the district attorney. To this committee Mr. Marshall addressed a letter of protest which displeased them, and they had him arrested for contempt. He was released on habeas corpus by the U. S. Supreme Court, holding that the implied power of the legislature to punish summarily for contempt is confined to those acts which in and of themselves hinder or prevent the discharge of a legislative duty or the exercise of a legislative power. (Marshall *vs.* Gordon, 243 U. S. 521, 37 Sup. Ct. Rep. 448.)

Miscellaneous.—The California Supreme Court in a short *per curiam* opinion has declared that the claim that selective draft for military service is unconstitutional under Art. 13, Sec. 1, and Art. 18, Sec. 1 of the Federal Constitution, prohibiting slavery and involuntary servitude, is utterly "without merit" (Claudius *vs.* Davie, 165 Pac. 689; to the same effect are United States *vs.* Sugar, 243 Fed. 423; and *Ex parte* Dostal, 243 Fed. 664, 675). The Supreme Court of Colorado has decided that the Governor's veto power does not extend to a recommendation of the General Assembly to the electors to vote at the next general election for or against a constitutional convention (People *vs.* Ramer, 160 Pac. 1132).

A state statute requiring railroads to provide equal but separate Pullman accommodations for white and colored persons, though the number of colored persons using such accommodations is negligible and a considerable extra burden will be imposed upon railroads, is declared to be constitutional by the Supreme Court of Mississippi (Southern Railway Co. *vs.* Norton, 73 So. 1). According to the decision of a Federal district court, Congress may entrust the determination of an immigrant's right to enter the country to an executive officer and a determination by him denying the right to enter is not a denial of due process (*Ex parte* Chin Own, 239 Fed. 391).

Constitutional prohibitions of imprisonment for debt mean, it is said, imprisonment for contract debt, and do not forbid imprisonment for nonpayment of tax debt or for non-payment of the amount due to prisoner's wife for her support (State *vs.* Wideman, 112 Miss. 1; State *vs.* Latham, 137 Tenn. 391). It has recently been decided by the Supreme Court of Pennsylvania that if a conveyance by a wife to a husband is invalid at the time it is made, a statute validating it retroactively is unconstitutional as taking the wife's property without due process (Elder *vs.* Elder, 100 Atl. 581).

PROPERTY AND CONTRACTS

Patents.—In 1896 the Circuit Court of Appeals for the Sixth Circuit decided that the owner of a patented machine might sell it subject to a condition that only goods of the vendor, though themselves unpatented, should be used with such machine (Heaton-Peninsular Button-Fastener Co. *vs.* Eureka Specialty Co., 77 Fed. 288).

Sixteen years later the same question came before the U. S. Supreme Court in the case of Henry *vs.* A. B. Dick Co. (224 U. S. 1; *A. Y. B.*, 1912, p. 522), and that tribunal came to the same conclusion which had been reached by the Circuit Court of Appeals. By the Act of Oct. 15, 1914 (*A. Y. B.*, 1914, p. 511) the anti-trust law was so amended as to make it unlawful for a person engaged in interstate commerce

> to lease or make a sale or contract for the sale of goods . . . machinery, supplies or other commodities, whether patented or not, for use, consumption or resale . . . or fix a price charged therefor . . . on the condition, agreement or understanding that the lessee or purchaser thereof shall not use . . . the goods . . . machinery, supplies or other commodities of a competitor or competitors of the lessor or seller, when the effect of such lease, sale or contract for sale, or such condition, agreement or understanding may be to substantially lessen competition or tend to create a monopoly in any line of commerce.

By this statute patentees were deprived of much of the advantage which accrued to them as a result of the rule laid down in the above cases. Now, by a recent decision of the U. S. Supreme Court, the rule itself has been repudiated, and the so-called Button-Fastener and Dick cases have been overruled. In the latest case the Court holds, one dissenting, that while the patentee may restrict the use of the patented article, he may not restrict the use of supplies used in operating the patented article. (Motion Picture Patents Co. *vs.* Universal Film Mfg. Co., 243 U. S. 502, 37 Sup. Ct. Rep. 416).

In 1913, in the so-called Sanatogen case (Bauer *vs.* O'Donnell, 229 U. S. 1; *A. Y. B.*, 1913, pp. 263, 346), the U. S. Supreme Court decided that a patentee may not by notice limit the price at which the patented article may be sold by a retailer who has obtained it by purchase from a jobber who has paid to an agent of the patentee the full price asked for the article sold. In order to avoid the effect of this decision, the Victor Talking Machine Co. adopted what it called a "license contract" and a "license notice", the latter being attached to its machines, by which it purported to retain title to all machines and to license their use only, among other conditions, upon the payment by the user of a stated "royalty", the absolute title not to vest until the patent having the longest to run should expire. In a case decided in 1917 the Supreme Court declared that this so-called "license" exhibited, in fact, none of the characteristics of a license but all of those of a sale, with an attempt by notice continually to fix the purchase price; that the court would look behind the form to the substance; and that looking at the substance of the transaction, it was governed by Bauer *vs.* O'Donnell, and the attempt to fix the price was, therefore, ineffective. (Straus *vs.* Victor Talking Machine Co., 243 U. S. 490, 37 Sup. Ct. Rep. 412.)

Servitude to Navigation.—A question of great importance to the owners of property on non-navigable streams has been decided in a recent case, which holds that the servitude to the interests of navigation is limited to streams which in their ordinary and natural conditions are navigable. When streams are made navigable by artificial means, adjoining property owners are entitled to compensation for any servitude thereby imposed. (United States *vs.* Cress, 243 U. S. 316, 37 Sup. Ct. Rep. 380.)

Survivorship of Joint Property.—Joint owners of personal property do not make a gift of it but a valid contract about it when they mutually agree that upon the death of either it shall belong to the survivor. As this contract may be performed within a year it is not within the statute of frauds, nor is it an attempted testamentary disposition of the property. (Green *vs.* Whaley, 1917, Mo., 197 S. W. 355.)

Bills and Notes.—That fictitious payees of checks continue to subject banks to hardship is shown by a recent Ohio decision. J. F. Jones' Sons gave checks for nearly $3,000, payable to various persons named to them by one Pangle as sellers of lumber to the Jones firm. No such sales had been made, and the payees were fictitious, though Jones' Sons believed them to be creditors. The names of these fictitious payees were forged as endorsers and the checks paid by the drawee bank and charged to the drawer's account. The bank was obliged to credit the drawer's account with the amount so charged against it. (Jones *vs.* People's Bank Co, 1917, Ohio, 116 N. E. 34.)

A cashier's check is properly designated as a "draft"; it is also property when delivered and put into circulation (People *vs.* Millar, 278 Ill. 490, 116 N. E. 131). Persons who would make a proper demand upon the maker of a note in order to hold an indorser should read carefully Simmons *vs.* Poole (227 Mass. 29, 116 N. E. 227). For demand on drawee to hold drawer and for computing "reexchange" as an item of damages, see an excellent opinion in Simonoff *vs.* Granite City National Bank.

Under the Negotiable Instruments Act one who takes a negotiable instrument as collateral security for a preëxisting debt is a holder in due course (Vogler *vs.* Manson, 1917, Ala., 76 So. 117, applying the statute which changed the rule in that state, a fact overlooked by the court in Miller vs. Johnson, 189 Ala. 354, 66 So. 486). This uniform law was applied by the Supreme Court of Louisiana to a note containing stipulations as to the extension of the time of payment and the application of collateral to its payment, which was held to be negotiable (Bonart *vs.* Robito, 1917, La., 76 So. 166). A promissory note negotiable in form, given for the services of a physician whose certificate has not been recorded and which is by statute declared void on that account, is subject to the defense even in the hands of an innocent purchaser for value before maturity (Whitehead *vs.* Coker, 1917, Ala. App., 76 So. 484); no reference is made in the opinion to the Negotiable Instruments Act or to decisions holding the opposite view. On the other hand, Phelps *vs.* Womack (1917, Okla., 167 Pac. 478) cites not only the statutory provision bearing on the point involved, but also decisions from various states construing such provision.

It is well for persons holding negotiable paper payable on demand to remember that payment must be demanded within 60 days after its issue in the absence of a contrary trade usage or peculiar facts (Plymouth Co. *vs.* Scanlon, 227 Mass. 71, 116 N. E. 468). The Supreme Court of Massachusetts has reiterated the view that the payee of a check may be the holder in due course thereof under the Negotiable Instruments Act (Colonial Fur Ranching Co. *vs.* First National Bank of Boston, 227 Mass. 12, 116 W. E. 731). This view is held in Alabama and New York but is rejected in Iowa and Missouri.

Guarantor and Surety.—One is not a guarantor when he promises to lend to another money with which to pay the latter's debts to third persons, and his contract is not within the Statute of Frauds requiring a memorandum in writing for its enforcibility (Murphy *vs.* Hanna, 1917, N. D. 164 N. W. 32). The surety on a contractor's bond for faithful performance is not released by the contractee's withholding payments after the contractor's breach of contract (Wykoff *vs.* Stewart, 1917, N. D., 164 N. W. 122). The right of subrogation of a surety to securities held by the creditor unknown to the surety is recognized in Fisk *vs.* Browne.

Sale of Goods.—Conditional sales of fixtures often enable the conditional purchaser to impose upon innocent mortgagees or vendees of the realty to which the personal property is attached. Hence, legislation in many states requires the contracts to be in writing and filed or recorded in a public office if the seller would retain his ownership of the property (Nickels *vs.* School, 1917, Mass., 117 N. E. 34.)

The Uniform Sales Act (Sec. 46) requires the seller, in shipping goods to the buyer, to make such a contract with the carrier on behalf of the buyer as may be reasonable, having regard to the nature of the goods and the circumstances of the case. Accordingly, if the seller ships by express goods worth $100 and takes an express receipt limiting the carrier's liability to $50 he violates his duty to the buyer. If the buyer has paid in advance and the goods are lost, the seller upon making a second shipment can recover nothing therefor. (Miller *vs.* Harvey, 221 N. Y., 54, 116 N. E. 781.)

Damages for breach of warranty are measured by the difference between the value of the goods at the time of delivery and what their value would have been if they had conformed to the warranty; what the buyers may have sold them for is wholly irrelevant. (F. W. Stock & Sons *vs.* Snell, 226 Mass. 499, 116 N. E. 263; the Uniform Sales Act, Sec. 53, is not referred to in the opinion.)

The buyer properly failed in his attempt to use the statute of frauds to escape liability on a sale contract in Roach *vs.* Lane (226 Mass. 598, 116 N. E. 470). The opinion is valuable also as an application of Sec. 69 of the Uniform Sales Act which prevents a buyer from rescinding a sale when he cannot return the goods and limits him to a claim for damages.

Sunday sales are made illegal by statute in many states, but even in such jurisdictions an innocent purchaser of the property from the illegal buyer gets perfect title (Mann *vs.* United Motor Boston Co., 226 Mass. 495, 116 N. E. 239).

Confusion of Goods.—One who receives goods to be kept separate from his own but mingles the two lots so that they are indistinguishable loses his property to the other owner. If the mixed goods have been sold in mass the owner may recover the proceeds of the whole in lieu of the goods. (People's National Bank *vs.* Mulholland, 1917, Mass., 117 N. E. 46.)

Statute of Limitations.—An insolvent made a payment on a debt to his brother the day before a petition in bankruptcy was filed against him. It was admitted that this took the case out of the statute of limitations as between the debtor and creditor, but the court held that it had no such effect as against the trustee in bankruptcy and the other creditors—that the insolvent had no right to destroy the defense of the statute. It was proved that the creditor had repeatedly asked the debtor for payment, but because of their relationship had not pressed for payment. (*In re* Salmon, 239 Fed. 413).

A different decision was made by an English court in a similar case. If, said that court, the payment was made with the object of setting up a debt which had been treated by all parties as dead and gone, it would have been fraudulent. But when the debt has been treated all along as a good debt but one which the creditor, because of the relationship, had not pressed for, knowing that the debtor would not set up the statute, and the debtor, feeling himself under a moral obligation, makes a part payment, this is not fraudulent and should be supported. (*In re* Lane, *Ex parte* Gage, 23 Q. B. D. 74, 58 L. J. Q. B. 373.)

Innkeepers.—The relation of host and guest has been held to be terminated when the guest has paid his bill and left his baggage in the check room, though he intended to return to the hotel later (Watkins *vs.* Hotel Tutwiler Co., 1917, Ala., 76 So. 302).

Landlord and Tenant.—The landlord's obligation to make repairs, his liability to the tenant for negligence in making them, and the imputation to the landlord of the knowledge of his architect about the condition of the premises are carefully considered in R. C. H. Covington Co. *vs.* Masonic Temple Co. (176 Ky. 729, 197 S. W. 420).

Dead Bodies.—The legal rights of relatives to the body of one deceased are discussed with much fullness in Deavons *vs.* Southern Express Co. (1917, Ala., 76 So. 288), where the plaintiff, a sister, was held to have sustained no property loss by the exposure of the dead body to rain and not entitled to damages for mental anguish, as the case was governed by Federal decisions on this point, the shipment being an interstate one. In Finley *vs.* Atlantic Transport Co. (220 N. Y. 249, 115 N. E. 715) the same subject was considered and a right of recovery by a son for the burial of his father's body at sea was affirmed. It appeared that the deceased had several hundred dollars with him, which would have fully paid the carrier for any service in transporting the body to New York and in notifying plaintiff of the death, and that the ship was within less than a day's voyage of New York when the body was cast into the sea. While the action was said to be a novel one the absence of precedent did not leave the plaintiff without a remedy.

PUBLIC UTILITIES

Public Use.—In a recent Alabama case it appeared that defendant operated a cotton gin in which three-fourths of the cotton of the community was ginned and also bought cotton seed. He adopted a rule that he would gin cotton only for those who would sell their cotton seed to him. Plaintiff was a competing buyer of cotton seed and sought to enjoin the enforcement of the above rule by the defendant. The only statutory regulation of cotton gins in Alabama is that which forbids the charging of more for ginning cotton for one who does not sell his cotton seed to the owner of the cotton gin than for one who does sell his cotton seed to such owner. Three judges held, two dissenting, that the injunction should be granted on the ground that when in a cotton growing state one "undertakes the ginning of cotton for the public, his gin is dedicated to the public use, and . . . becomes clothed with a public interest affecting the community at large and subject to government regulation," especially where the owner of the gin has a practical monopoly; that the conduct of the defendant came within the spirit if not within the letter of the above statute; and that the plaintiff being injured might maintain this action. (Tallasee Oil and Fertilizer Co. *vs.* Halloway, 76 So. 434.)

Rate Regulation.—In Missouri it has been held that where a public-service commission, in considering the proper price for gas supplied to a municipality, after a hearing fixed a rate lower than the existing charge and retained jurisdiction pending the determination of the reasonableness of the rate, the order for the "test" rate is constitutional (State *ex rel.* Watts Engineering Co. *vs.* Public Service Commission, 191 S. W. 412).

Carriers.—The evidence in a recent Pennsylvania case showed that the defendant railway paid rebates to competitors of plaintiff on intrastate shipments. In an action based on this discrimination it was held that the measure of damages was the difference between the actual freight charge to plaintiff and the charge at the rate extended to the most favored shipper. Generally in the case of discrimination where there is no overcharge, the plaintiff is confined to the damage which he has actually suffered, but in Pennsylvania a statute provides that a concession in rates made to any one shipper shall be extended to all shippers alike, and, therefore, any discrimination becomes thereby an overcharge. (Hall *vs.* Pennsylvania R. R. Co., 100 Atl. 1035.)

In a case apparently of first impression in the United States it has been held that, although ordinarily a carrier is not liable as an insurer for articles kept with him by a passenger, the carrier is liable as an insurer for goods which the carrier refused to carry as baggage, being goods which are in their nature baggage (Borden *vs.* New York Central R. R. Co., N. Y., 98 Misc. 574). We are also told by a New York court that a sleeping-car company is under a duty to exercise the same degree of reasonable care and watchfulness over personal effects of a passenger, and is equally liable for the loss thereof, while he is asleep during the daytime as when he is asleep during the night (Robbins *vs.* Pullman Co., 164 N. Y. Supp. 111).

TORTS

Harm without Legal Injury.—A recent decision of the New York Court of Appeals furnishes another illustration of the rule that a person may suffer serious property harm without sustaining a legal injury. Forest trees of plaintiffs were destroyed by beavers which the State under statutory authority had placed and reared near plaintiff's land. The damage amounted to $1,900, and this sum was awarded to plaintiffs by the Court of Claims and the award was affirmed by the Appellate Division, but these decisions were reversed and the claim dismissed by the Court of Appeals. It was declared that the State had the constitutional power to pass the statute, and that in carrying out its provisions the State was acting as a trustee for the people and doing what it thought best for the interest of the public at large. While the plaintiffs might have fenced their land or driven the beavers away from it without violating the statute for the beavers' protection, the harm inflicted by these animals was *damnum* *absque injuria.* Similar legislation has been enacted in Colorado, Maine, Michigan, North Dakota, South Dakota, Vermont, Utah, Wisconsin, Wyoming and Quebec. (Barrett *vs.* State of New York, 220 N. Y. 423, 116 N. E. 99.)

Master and Servant.—It is not in the line of or incidental to a servant's employment to shoot a person with whom he has had an altercation as to whether such person has performed his contract with the master (Wells *vs.* Henderson Land & Lumber Co., 1917, Ala., 76 So. 28). A master is held liable to punitive damages when the servant's injury was due to the master's gross and wanton negligence (Clinton Mining Co. *vs.* Bradford, 1917, Ala., 76 So. 74).

The Government is disposed to enforce strictly against employers the Hours of Service Act (34 Stat. 1415, 8 U. S. Comp. Stats. Ann. Secs. 8677-8680), requiring them, when keeping employees overtime, to show that the causes of excess service fall within the proviso allowing them to require such excess service (Atchison, T. & S. F. Ry. *vs.* U. S., 243 Fed. 114).

Workmen's Compensation.—The term "personal injury" in the Massachusetts Workmen's Compensation statute has been held more comprehensive than "personal injury by accident" in the English Act, but it does not include a "neurosis of the nerves supplying certain muscles, resulting from a posture which causes the employee to bend with shoulders forward so as to induce pressure on the brachial plexus." Earlier Massachusetts cases, as well as many decisions in other states, are reviewed in *In re* Maggelet (116 N. E. 972).

That a servant of X who is let to Y for temporary service, may, "so far as the provisions of the Workmen's Compensation Law are applicable, look to the one or the other, or to both, for compensation for injuries due to occupational hazards" is the doctrine of Dr. Noyer *vs.* Cavanah (221 N. Y. 273, 116 N. E. 992). The duly elected and qualified sheriff of a county is not an employee of the county within the Workmen's Compensation Act (Mono Co. *vs.* Industrial Acc. Comm., 1917, Cal., 167 Pac. 377). An employee shot by a fellow servant who negligently thinks him a thief is entitled to a recovery under the California Act (Atolia Mining Co. *vs.* Industrial Acc. Comm., 1917, Cal., 167 Pac. 148). A schoolhouse janitor is an employee of the city of Boston under the Massachusetts Act, although his appointment must be made under the Civil Service rules (White *vs.* City of Boston, 226 Mass. 517, 116 N. E. 481); but the teacher of automobile repairing in a city vocational school is not (Leseur *vs.* City of Lowell, 227 Mass. 44, 116 N. E. 482).

The difficulty of determining whether an injury to an employee grows out of the employment is shown in *In re* Borin, where the employee crawled over dye tubs to open windows which the employer had nailed down, and was injured by a chisel he was using to force the windows open. He was held not to be within his employment, but doing an act for his own personal convenience. Whether there is any evidence in the record which fairly tends to establish the fact that the accident in question arose out of and in the course of the injured person's employment, is a question of law for the court (Northern Ill. Traction Co. *vs.* Industrial Board, 279 Ill. 565, 117 N. E. 95).

Negligence.—Liberation of highly combustible gas from a pipe to remove obstructions therefrom is negligence unless the act is unavoidably necessary and accompanied by every reasonable precaution (Bradley *vs.* Shreveport G. E. L. & P. Co., 1917, La., 76 So. 230). The same doctrine was applied in case of electric wires in Boutlier *vs.* City of Malden (226 Mass. 479, 116 N. E. 251). The negligent killing of a dog, though unlicensed, subjects the owner of the car whose chauffeur runs the dog down to damages; even such a dog is not a trespasser or an outlaw (Lacker *vs.* Strauss, 226 Mass. 579, 116 N. E. 236).

Contributory negligence by the plaintiff will not defeat him unless it is the proximate cause of his injury. This modification of strict common law doctrine is characterized in a recent decision as humane (West *vs.* Gillette, 1917, Ohio, 116 N. E. 521).

Nuisances.—Even in jurisdictions which apply the doctrine of "alluring nuisance" to railroad turntables and like situations, the courts balk at the suggestion that a motor truck while moving along a street in an ordinary manner belongs to this category. Accordingly, the Superior Court of Kansas holds that a boy of 15 who tries to ride on such a vehicle and is badly hurt is a trespasser and not an innocently baited victim of the truck owner. (Gamble *vs.* Uncle Sam Oil Co., 100 Kan. 74, 163 Pac. 627.)

Damages.—An interesting case of special but not speculative damages arises when a common carrier negligently delays the transportation of articles which it is informed are about to be entered in a prize contest. Evidence is admissible tending to show the probability that the shipper would have been successful, and the case is to be left to the good sense of the jury to determine the value of the shipper's chance in the competition. (Kansas City, M. & O. Ry. *vs.* Bell, 1917, Tex. Civ. App., 197 S. W. 322.)

Inducing breach of contract by threats to sue customers of a plaintiff for infringement of patent which defendants have not obtained is an actionable tort.

Bailee's Liability.—That a bailee of an automobile is liable for its conversion when he returns it to the owner's chauffeur upon an order of the owner's daughter who has no authority to give the order is held in Dodge *vs.* Peerless Motor Car Co. (226 Mass. 561, 116 N. E. 257). A broker who buys and holds property on a margin for his customer is bound to carry such property until additional margin has been demanded and refused (Thompson *vs.* Baily, 220 N. Y. 471, 116 N. E. 387).

Defamation.—A statement made by a consulting engineer of a corporation engaged to straighten out its affairs to the secretary of the state railroad commission about the company's management is upon a privileged occasion (Ferrier *vs.* Dr. Friese, 243 Fed. 765).

Motor Vehicles.—While ownership of an automobile raises the presumption that the owner is liable for the driver's negligence, this presumption is overcome by evidence that the driver is the hired servant of the owner's husband (Potts *vs.* Pardee, 220 N. Y. 431, 116 N. E. 78). It is also overcome by evidence that the driver is the son of the owner, using the car at the time of the negligent act solely for his own pleasure. "It would be far fetched," said the court, "to hold that a father should become liable as principal every time he permitted a capable child to use for his personal convenience some article primarily kept for family use." Decisions in other States supporting that view are disapproved (Van Blaricom *vs.* Dodgson, 220 N. Y. 111, 115 N. E. 443). An unregistered automobile is a trespasser upon Massachusetts streets, and a person riding therein with knowledge of its non-registry has no rights against other travelers except for injuries recklessly or willfully inflicted (Rolli *vs.* Converse, 227 Mass. 162, 116 N. E. 507). State regulation of motor vehicles from other states is fully sustained in Kane *vs.* New Jersey (242 U. S. 160, 37 Sup. Ct. Rep. 30).

STATUS

Marriage and Divorce.—Up to 1902 a "common-law marriage", arising from the mutual consent to be husband and wife, was valid in New York, first by judicial decision, and after 1896 by statutory enactment. By statutory provision, taking effect on Jan. 1, 1902, it was declared that no marriage should be valid within the state unless solemnized as therein provided, thus abolishing common-law marriages. This statute was itself partly amended and partly repealed in 1907, and among the provisions repealed was that which expressly prohibited common-law marriages. Since that time there has been much uncertainty as to whether common-law marriages are or are not valid, the lower courts differing on this point. The New York Court of Appeals has recently declared that such marriages are valid, and so has set the matter at rest again (Matter of Ziegler *vs.* Cassidy's Sons, 220 N. Y. 98). In a subsequent case in the New York Appellate Division it is declared that when parties intend to enter into a ceremonial marriage in New Jersey but the ceremonial marriage is defective, and thereafter they cohabit as husband and wife in New York, there is a common-law marriage in New York (Davidson *vs.* Ream, 164 N. Y. Supp. 1037).

Though New York does not recognize as binding a divorce obtained in another state upon constructive service, yet when A goes to Nevada and obtains a divorce from B at the request of C who finances her, and then marries C, C cannot question the validity of the divorce, and so cannot obtain a decree in New York annulling his marriage on the ground that A has another husband living (Kaufman *vs.* Kaufman, 163 N. Y. Supp. 566).

An apparently novel point has been passed upon recently by a Wisconsin court. A woman obtained a divorce in Illinois, where the law forbids remarriage within a year. She went with another resident of Illinois to Indiana and they were there married within a year, this not being unlawful in Indiana, and then resided in Wisconsin. It is the law of Illinois and Wisconsin that, though generally a marriage valid in another jurisdiction is valid in those states, this is not true when residents go out of one of those states to get married in order to evade its laws. Furthermore, there is specific statutory provision in Wisconsin requiring full faith and credit to be given to annulment proceedings in another state when the courts of that state had jurisdiction. As a result of these statutes and of comity the Wisconsin court refused to recognize the Indiana marriage as valid. (Hale *vs.* Industrial Commission, 162 N. W. 312.)

Although generally a party plaintiff has a right to discontinue any action before final decision if no rights have accrued to third parties, this is held not to be the case in an action for annulment of a marriage, because of the interest which the public has in the correct adjudication of the controversy as to the validity of a marriage (Ginther *vs.* Ginther, N. Y. App. Div., 56 N. Y. L. J. 132).

Marriages entered into by Indians according to Indian custom when they are living under a tribal organization, recognized as a distinct political community, and subsequent divorces which are also effective according to such custom, will be recognized as valid and effective. But it is suggested that the results would be different if the parties had left the haunts of the tribe and had gone to dwell in civilization. (La Framboise *vs.* Day, Minn., 161 N. W. 529.)

Husband and Wife.—Though the Married Woman's Act of West Virginia is interpreted as not exonerating the husband from liability for the personal tortious acts of his wife because he is still presumed to control her person, nevertheless, since it does give the wife absolute control of her property, it does relieve the husband from liability for injury caused by her negligent management of her separate property (Leros *vs.* Parker, W. Va., 91 S. E. 660). In Arkansas it has been determined recently that as a consequence of the Married Woman's Act a wife may sue her husband for a tort and that a personal representative of the wife may sue the husband for wrongful death under a statute giving the personal representative of a deceased person such right of action (Fitzpatrick *vs.* Owems, 186 S. W. 832). It has been declared by an Oregon court that since the Married Woman's Act has not abridged the husband's right to the companionship, love and services of his wife, comprehended in the term "consortium", it therefore has not abridged his right to sue for loss thereof through her personal injury negligently inflicted by another (Elling *vs.* Blake-McFall Co., 166 Pac. 57).

In view of the constitutional provision of South Dakota that every person shall have a remedy for every injury done to him in his person and the statutory enactment that a married woman shall retain all civil rights of a single woman and may sue in her own name for any injury to her reputation, person or property, it was held by a court of that state that a married woman could sue for injury to her personal rights by the sale of opium to her husband, the word "person" in the constitution and statute including personal rights (Moberg *vs.* Scott, 161 N. W. 998).

Similarly, in Alabama it has been held that a statute giving a married woman the right to sue in her own name for injuries to her person and providing that all damages are her separate property gives her the right to sue for alienation of affection and criminal conversation, notwithstanding the fact that a statutory provision gives the husband an action for criminal conversation with his wife and says nothing about the wife's right to a similar action (Parker *vs.* Newman, 75 So. 479).

It has recently been declared both in Minnesota and Kentucky that statutes which make both husband and wife liable for necessaries still leave the husband primarily liable. As a result, it was held in Minnesota that where the wife pays for necessaries without an understanding that such payments are contributions towards family expenses, she may recover the amount from her husband's estate (*In re* Kasanke's Estate, 162 S. W. 1060). In the Kentucky case it was held that if necessaries are supplied on the credit of the husband, the wife's note given later for such necessaries is void as being merely a means used to make her a surety for her husband contrary to the statute (Underhill *vs.* Mayer, 192 S. W. 14).

Infancy.—Some doubt has existed since the general adoption of the Uniform Negotiable Instruments Act as to whether an infant payee of a note can under that law recover back the note from his indorsee who paid value for it and had no notice of the payee's infancy. In the first case on this point under the act it was held that he could recover. (Murray *vs.* Thompson, Tenn., 188 S. W. 578.)

In a recent New Jersey case we have a modern application of the rule that where all that is claimed as the foundation of an infant's tort is covered by the breach of his contract, there can be no recovery in a tort action because this would in effect be allowing the indirect enforcement of an infant's contract which can not be enforced directly. The action resulted from the bailment of an automobile to an infant and its injury as a result of his negligence. (Brunhoelzl *vs.* Brandes, 100 Atl. 163.)

Parent and Child.—Under a statute making it an offense for a father to abandon his infant child, he is not guilty where he abandons it before it is born but does not continue such abandonment afterwards (Shelton *vs.* State, Ga., 91 S. E. 923).

Though it is universally recognized that parents have *prima facie* a natural right to the custody of their children which should not be denied except for strong reasons, still the best interest of the child is always the real test in each case and may justify the denial of the parents' claim to custody. This is particularly true if custody has previously been awarded to some other relative with the consent of the parent or parents. The New York Court of Appeals has declared that in such a situation the burden is upon the parent to prove that the child will be better off with him. (Matter of Gustow, 220 N. Y. 373; Waters *vs.* Gray, Mo., 193 S. W. 33.)

In a recent Massachusetts case it was held that adoption may be set aside in an action brought for that purpose after the death of the adopting parent by those who, except for the adoption, would be heirs of such parent, on the ground that the adoption was induced by fraud on the part of the person adopted (Raymond *vs.* Cooke, 115 N. E. 423).

PRACTICE

Contempt of Court.—Advice of legal counsel that a particular act does not violate an injunction does not protect the violator from punishment for contempt, and will subject the adviser to punishment if he knows of the injunction (Court Rose No. 12, Foresters of Am. *vs.* Corna, 279 Ill. 605, 117 N. E. 144). Contempt may be committed outside the state in which the injunction is issued. Unlike crimes against the peace and dignity of the state, contempt consists in affronting the authority of a particular court. Hence, if a court has jurisdiction of the parties and of the subject matter out of which a contempt grows, it does not matter where the act of contempt is committed (Farmers' State Bank of Texhoma *vs.* State, 1917, Okla., 164 Pac. 132). In this case the court had enjoined the sale of certain personal property, a part of which was outside the state.

Evidence.—It is well settled that parol evidence cannot be given to vary the terms of a written contract. But if the writing does not contain all of the contract terms this may be shown by parol and the actual contract thus established be enforced. (Missouri Dist. Tel. Co. *vs.* Morris & Co., 243 Fed. 481.)

Privileged Communication.—While a physician cannot, without the consent of his patient, be examined in a civil action as to information acquired in attending the patient which is necessary to enable him to prescribe, the bar does not apply to the physician's testimony as to the character and value of the services of a nurse who is employed by the patient (Higgs *vs.* Bigelow, 1917, S. D., 164 N. W. 89).

Injunction.—When a citizen of state A brings his action against a citizen of the same state in another state, for the purpose of escaping the application of a rule of law of state A, the courts of that state will enjoin the prosecution of such action, to prevent the plaintiff from depriving the defendant of a substantial right (Weaver *vs.* Alabama Great Southern Ry., 1917, Ala., 76 So. 364).

While employees have the right to cease work of their own volition, they have not the right in Massachusetts to strike in order to force their employer to employ only union men. If they do so strike the employer is entitled to injunctive relief and to recover damages which are shown to be the result of such illegal strike (W. A. Snow Iron Works *vs.* Chadwick). The right to injunctive relief is denied in New York to employers of non-union labor against labor unions whose members serve notice on the employers and on contractors that they will not install non-union made material in any jobs on which they are at work. Following the majority opinion in National Protective Association *vs.* Cummings (170 N. Y. 315, 63 N. E. 369), the court unanimously declares that:

> Where it is determined that a labor organization can control the body of its members for the purpose of securing

STATUS OF UNIFORM STATE COMMERCIAL LEGISLATION

[The figures indicate the year of adoption]

	Negotiable Instruments	Warehouse Receipts	Sales	Stock Transfer	Bills of Lading	Partnership	Limited Partnership	Torrens Land Registration[1]	Workmen's Compensation[1]
Me....	'17	'17	...	...	'17	...	...	....	'15
N. H...	'09	...	...	...	'17	...	...	....	'11
Vt.....	'12	'12	...	...	'15	...	...	....	'15
Mass...	'98	'07	'08	'10	'10	...	...	'98	'11
R. I....	'99	'08	'08	'12	'14	...	...	....	'12
Conn...	'97	'07	'07	'17	'11	...	...	....	'13
N. Y...	'97	'07	'11	'13	'11	...	...	'08	'14
N. J....	'02	'07	'07	'16	'13	...	...	....	'11
Pa.....	'01	'09	'15	'11	'11	'15	'17	....	'15
Del....	'11	'17	...	...	...	...	...	....	....
Md....	'98	'10	'10	'10	'10	'16	...	....	'14
Va.....	'98	'08	...	...	...	...	...	'16	....
W. Va..	'07	'17	...	...	...	...	...	....	'13
N. C...	'99	'17	...	...	...	...	...	'13	....
S. C....	'14	...	...	...	...	...	...	'16	....
Ga.....	...	...	...	...	...	...	...	....	....
Fla....	'97	'17	...	...	...	...	...	....	....
Ky....	'04	...	...	...	...	...	...	....	....
Tenn...	'99	'09	...	'17	...	'17	...	....	....
Ala....	'07	'15	...	...	...	...	...	'14	....
Miss...	'16	...	...	...	...	...	...	....	....
Ark....	'13	'15	...	...	...	...	...	....	....
La.....	'04	'08	...	'10	'12	...	...	....	'14
Tex....	...	...	...	...	...	...	...	....	'13
Okla...	'09	'15	...	...	...	...	...	....	'15
Ohio...	'02	'08	'08	'11	'11	...	...	'13	'11
Ind....	'13	...	...	...	...	...	...	....	'15
Ill.....	'07	'07	'15	'17	'11	'17	'17	'97	'13
Mich...	'05	'09	'13	'13	'11	'17	...	....	'12
Wis....	'99	'09	'11	'13	'17	'15	...	....	'11
Minn...	'13	'13	'17	...	'17	...	...	'01	'13
Ia.....	'02	'07	...	...	'11	...	...	....	'13
Mo....	'05	'11	...	...	'17	...	...	....	....
Kan...	'05	'09	...	...	...	...	...	....	'11
Neb....	'05	'09	...	...	...	...	...	'15	'13
S. D...	'13	'13	...	...	...	...	...	'17	....
N. D...	'99	'17	'17	...	...	...	...	'17	....
Mont..	'03	'17	...	...	...	...	...	....	'15
Idaho..	'03	'15	...	...	'15	...	...	....	'17
Wyo...	'05	'17	'17	...	...	'17	...	....	'15
Col....	'97	'11	...	...	...	...	...	'03	'15
N. M...	'07	'09	...	...	...	...	...	....	'12
Ariz....	'13	...	'13	...	...	...	...	....	....
Utah...	'99	'07	'17	...	...	...	...	'17	....
Nev....	'07	'13	'15	...	...	...	...	....	'11
Cal....	'17	'09	...	...	...	...	...	'97	'11
Ore....	'99	'13	...	...	...	...	...	'01	'13
Wash..	'99	'15	...	...	'13	...	...	'07	'11
Alaska.	'13	'13	'13	'13	'13	'17	'17	....	....
Hawaii.	'07	...	...	...	...	...	...	....	....
D. C...	'99	'10	...	...	...	...	...	....	....
P. I....	...	...	...	...	...	...	...	....	....
Total	49	42	18	14	21	8	3	17	32

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[1] Not uniform.

for them higher wages, shorter hours of labor and better relations with their employers, and as a part of such control may refuse to allow its members to work under conditions unfavorable to it, or with workingmen not in accord with the sentiment of the labor unions, the right to refuse to allow them to install non-union made material follows as a matter of course, subject to there being no malice, fraud, violence, coercion, intimidation or defamation in carrying out their resolutions or orders. Voluntary orders by a labor organization for the benefit of its members and the enforcement thereof within the organization is not coercion. . . . If the defendants had called upon the public generally to discontinue using the plaintiff's material and had sought to prevent all persons by communications, written or otherwise, from dealing with the plaintiff, their acts would have been illegal.

This is substantially the view of the majority in Paine Lumber Co. *vs.* Neal (244 U. S. 459, 37 Sup. Ct. R. 718).

According to a decision handed down in the State of Massachusetts, former employees will be enjoined from using the trade secrets of the employer to his disadvantage and their profit.

DOMESTIC LEGISLATION

The topics of most general interest in our state legislation are those of civil procedure and of uniform state laws. On the subject of civil procedure our legislators are making haste slowly. But little in the way of positive simplification of procedure has been accomplished. Most of the states seem to be marking time, while their commissions finish their preliminary task of investigating and reporting. See, however, session laws, 1917, of California (Res. 14), of New York (Ch. 331), and of Oregon (S. J. R. No. 2).

Most hopeful progress has been made during the year in the field of uniform state laws. States like California and Maine, which had refrained from enacting any of these laws, fell into line and gave added impetus to the movement for uniformity of law, not through national, but through state legislation. Thirteen of the acts sent out by the National Conference of Commissioners on Uniform State Laws were put on the statute books of various states. As a result the Negotiable Instruments Act has been adopted by 49 out of 53 of the United States jurisdictions, thus securing a uniform code of negotiable paper throughout the United States, with the exception of Georgia, Porto Rico, Texas and the Philippine Islands. The status of the adoption of the principal uniform commercial acts is shown in the accompanying table. Besides the acts cited the Act for Extraditions of persons of Unsound Mind and the uniform Land Registration Act have been adopted in three jurisdictions, and the Cold Storage Act, the Foreign Acknowledgments Act and the Foreign Probate Act in four.

CRIMINAL LAW[1]

PAUL E. BRYAN

National Defense and Service.—Several states have passed alien-registration acts, typical being that of Connecticut (350), which requires enemy aliens to register on the governor's proclamation and hotels and boarding houses to report alien guests and subsequent arrivals and departures. Desecration of the national flag or emblem, either by mutilation or commercialization, is made a crime in Georgia (p. 203), North Carolina (271), New York (54), Tennessee (75) and Texas (123), while Massachusetts (311) and Minnesota (247), punish the playing of "The Star-Spangled Banner" in a public place as a medley, or as dance or exit music, or otherwise than as a whole composition. It is a misdemeanor in Florida (134) and a gross misdemeanor in Minnesota (463) to interfere with enlistments in war time. Georgia (p. 204) suspends for the period of the war the law against the operation of freight trains on Sunday, and Massachusetts (207) permits agricultural work on the Sabbath during the war. Maryland (33) is a unique "lazy man's act," providing compulsory work for idle men between 18 and 50, excepting students and those temporarily unemployed, but including the "idle rich". New Hampshire (173) prohibits coercion of labor and instigation of strikes in plants making or distributing food and war materials. Maryland (7) makes it a felony to store food products for the purpose of raising the price, and (8) gives 20 years for poisoning domestic waters or maliciously dynamiting property of certain kinds enumerated, while it is a misdemeanor in Connecticut (366) to enter another's field with intent to injure food crops. It is criminal in Maine (177) to discriminate against a soldier in uniform.

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[1] The numbers following names of states refer to chapters in the volumes of session laws of 1917 unless otherwise specified.

Health and Safety.—The public health has received much consideration at the hands of the various legislatures. Massachusetts (466) codifies and amends laws governing the sale of foods and drinks. Missouri (p. 129) requires milk and cream receptacles to be kept clean and sanitary, even in transit; the carrier must not hold them more than 24 hours, and every receptacle unlawfully dealt with constitutes a separate offense. Arizona (55) puts the ban on the common towel and drinking cup, and Nevada (227) requires barber shops and utensils to be kept clean and sanitary. Oregon (387) makes it a misdemeanor for any one having a contagious disease to be on any public conveyance.

The legislative effort to curb the spread of venereal diseases is notable. New Jersey (23) makes either marriage or sexual intercourse by one knowing himself or herself to be affected with venereal disease a misdemeanor, and Wisconsin (235) requires physicians to report all cases to the state Board of Health in writing, and to advise their patients against marriage before cure; if the latter refuse full treatment, the state Board shall compel them to take it at a state institution, and if any such procure a marriage license without producing a certificate of cure from a state laboratory, it is a misdemeanor. North Carolina (27) hits quack doctors and remedies. "Pistol toting" is forbidden in Maine (217) and "silencers" in Connecticut (105). The laws governing motor vehicles have been tightened almost everywhere, Connecticut (333) devoting 50 sections thereto. Maine (50) and Massachusetts (246) require warning signs at grade crossings, and provide that drivers must come to a full stop before going over the tracks. South Carolina (25) and Tennessee (21) make it criminal for an intoxicated person to drive a motor vehicle.

Women and Children.—Attempts to suspend the standards for labor during the war under the guise of patriotism have been checked in most states but succeeded in Vermont (172). Eight states reduced the hours for women, while 11 strengthened their child-labor laws by either raising the age limit or lessening the hours (see also XIV, *Child Welfare;* and XV, *Labor Legislation*). Pennsylvania (290) makes it a crime for a parent to neglect to support an illegitimate child. North Carolina (29) raises the age of consent for rape from 10 to 12 years, and (242) prohibits the sale of contaminating literature to minors. Many states are trying to keep cigarettes and tobacco from minors, as Kansas (166), and the age limit is raised from 16 to 18 in New York (564). Oregon (244) has a "bone-dry" cigarette law, and Arizona (9) makes it a misdemeanor on the part of the minor to buy, accept, or receive cigarettes, papers, etc., and raises the age limit to 21, while South Dakota (153) puts a fine of $10 on a minor for use of a cigarette in public.

Liquors and Drugs.—The year has added several "wet" states to the "dry" column, and thanks to the interpretation of the Webb-Kenyon Act by the U. S. Supreme Court (see *Law and Jurisprudence, supra*), the hitherto "dry" states have now become "bone-dry" by being able to prohibit absolutely all importation for beverage purposes from "wet" states. The following states enacted general prohibition laws, to take effect in 1917 and 1918: Indiana (4), Montana (175), South Carolina (94, 38), South Dakota (p. 281), Utah (2), Michigan (H. 204, S. 66), and Tennessee (12), Nebraska (187) supplementing a constitutional amendment.

But the most significant fact in the progress of prohibition during the year is the resolution recently passed by Congress, with a good majority submitting national prohibition in the form of an amendment to the Federal constitution, to the states, for ratification or objection.

(See also XIV, *The Liquor Problem*). Utah (2) makes it a misdemeanor to drink or be drunk in any public place. Pennsylvania (330) passed an anti-free-lunch act, while Vermont (234) repealed her curious prohibition act of 1915, a referendum measure.

Morals.—Connecticut (352) forbids all secular labor on Sunday, except works of necessity or mercy, but allows amateur sports if no charge is made for admission and the public peace and quiet or worship is not thereby disturbed; under (382) delicatessen stores may operate, and periodicals and smokers' supplies may be sold, and rifle ranges (166) may be used for practice. Oregon (1) repeals her Sunday-closing laws altogether.

Georgia (p. 177) declares all lewd houses to be nuisances, subject to injunction and abatement, and provides procedure for prosecutions, Montana (95) and Arizona (62) taking similar action. It is a misdemeanor in North Carolina (158) to entice a female into a hotel for immoral purposes or to occupy a bedroom with her. Wyoming (39) imprisons "pimps" from one to three years, defining them to be men who frequent bawdy houses or profit from prostitution. It is made a crime in Vermont (240) to put on immoral vaudeville or motion pictures, and Montana (29) forbids gambling at pool or billiards and punishes both proprietors and gamblers. New Mexico (59) makes it a misdemeanor falsely to pretend blindness, etc., for the purpose of getting gain, or actually securing aid or assistance. Utah (89) imposes a maximum of 10 years on those who work the "confidence game." Florida (102) punishes indecent exposure and (103) lasciviousness and the publishing and displaying of obscene pictures or language.

Property and Business.—Types of laws protecting automobile owners are Connecticut (91), making theft of a motor vehicle a felony; Montana (48), making it unlawful to buy or sell, or knowingly have in possession, an automobile whose serial number or other identification mark has been removed or altered with fraudulent purpose; and Nebraska (201), requiring garages to keep public records of engine and license numbers, etc., and report alterations to the sheriff, such alteration being *prima facie* evidence of larceny. Loitering in or upon machines is forbidden in Oklahoma (149), and using without the owner's consent in South Carolina (19).

Several states, like Wisconsin (164), make it criminal fraudulently to draw or utter a check without funds or credit in the bank. False and deceptive advertising is put under the ban in Wyoming (63), Nevada (201) and Indiana (55). Trading stamps and premium certificates are abolished in California (147), Idaho (122) and Wisconsin (480), and prohibitively taxed in Montana (17), Nevada (225), North Dakota (238) and Kansas (331). The title "doctor" is limited to graduates of recognized schools in Connecticut (408), and granting of college degrees by other than certain named institutions is prohibited in Oklahoma (147). North Dakota (189) requires railroads in the state to pay at least semi-monthly, while Illinois (S. B. 163) requires all concerns to pay in cash or scrip redeemable in cash at the company's office. Delaware (213) is a typical law against discrimination in handling fuel and food products, and New Hampshire (160) provides for an investigation by the attorney-general, on petition of 100 voters, into the high price of necessaries, and lays a heavy penalty on those who may be found guilty of forcing up prices arbitrarily and unreasonably.

Prisoners.—Prisons and prisoners have received much attention at the hands of 1917 legislatures. North Carolina (262) requires tubercular prisoners to be kept at farm work instead of inside the prison walls, and (286) has a novel law providing for three classes of prisoners, according to behavior, with pay allowance of ten, five, and two cents a day, and commutation of eight, six, and no days for each month, respectively; whipping must be in the presence of the chaplain or prison physician, and young convicts are to be kept separated from old and hardened criminals. Nebraska (133) pays half of the earnings of convicts to dependents or to the convicts themselves. Missouri (p. 155) devotes 42 sections to this subject, providing, *inter alia*, that any convict serving three-fourths time in an orderly manner shall be discharged. Florida (66) pays from $3 to $5 to convicts on discharge, with transportation back to place of sentence, but retains the inhuman "lease system", which Tennessee (46) abolishes. California (527) requires indeterminate sentences in all cases, while New York (480) excepts murder and puts a minimum of ten years on other ordinary life sentences. North Dakota (164) sets aside certain amounts for boys and girls in reformatories, and (172) remunerates innocent persons wrongfully convicted, not to exceed $2,000 in any case. Sterilization is allowed in Oregon (279) in the cases of criminals three times convicted of felony, sodomites and other sexual perverts, as a corrective and protective measure and not in any sense punitive. (See also XIV, *Criminology and Penology.*)

Procedure.—Idaho (145) creates the crime of "criminal syndicalism," defining it to be the "doctrine which advocates sabotage, violence, or unlawful methods of terrorism as a means of accomplishing industrial or political reform", and makes it a felony to teach, advertise or justify the doctrine, or join an assembly formed to advocate it, punishable by a fine of $10,000, or 10 years' imprisonment, or both. Minnesota (215) has a similar statute. Solicitation to commit any statutory misdemeanor in Idaho (137) is made a misdemeanor. In New Jersey (44) one bringing into the state property which he stole, or received knowing it to be stolen outside the state, is punishable as if the stealing had taken place in the state. Florida (105) allows indictment by grand jury of any county of the circuit, if the judge deems it expedient to change from the county of the crime, either on account of undue prejudice or lack of jurors therein. Indiana (134) makes second-degree arson what at common law would fall short of an "attempt", being only "preparation". North Carolina (168) permits consolidation of several indictments in one with several counts, where all relate to one single act, or several connected acts, or several offenses of the same general character, and in Washington (37) two "alternate jurors", (who must sit with the regular jury throughout the trial), may be called in felony trials where the judge foresees difficulty. Pennsylvania (111) allows the criminal to pay off his fine in 12 monthly instalments.

IX. PUBLIC RESOURCES AND PUBLIC WORKS

PUBLIC LANDS

Morris Bien

Stock-Raising Homesteads.—By an Act of Dec. 29, 1916, Congress further liberalized the opportunities for securing public lands by authorizing homestead entries for stock-raising purposes of areas as large as 640 acres per entry. In spite of the fact that the provisions of the Act are such as to make an effort to prevent speculative entries in order to secure the control of large areas of public lands, there are some who feel that the terms of the law can be readily evaded and make possible the securing of very large tracts in one holding (see XVI, *Live Stock*).

No land will be subject to the operation of this law unless designated by the Secretary of the Interior as coming within its terms. The entryman is required to make such permanent improvements upon the land as to increase its value for stock-raising purposes not less than $1.25 per acre, at least one-half of such improvements to be placed upon the land within three years from the date of entry. This provision is in lieu of the cultivation required of homestead entrymen. Entries under this Act are made subject to the laws concerning the right to mine and prospect for coal and other minerals, such rights remaining at the disposal of the United States. The Act provides that lands containing water holes or other bodies of water used or needed by the public for watering places shall not be designated for entry but may be reserved and held open to public use, together with such land as may be needed for access to such watering places.

Yuma, Arizona, mesa lands.—A departure from former practice was made by Congress in passing an Act of Jan. 25, 1917, affording an opportunity to the Reclamation Service for the sale of public land which can be irrigated on the high lands above the present Yuma Project, Arizona, known as the "mesa lands." The Act is based on the expectation that the value of the lands and the prospect of irrigation will make it possible to secure a sufficient amount from purchasers to pay for the necessary irrigation works for the reclamation of the lands. The money is to be paid within three years, and presumably the receipts will be sufficient to carry on the work without delay. The Reclamation Service has been engaged on preliminary work in connection with plans for carrying out the terms of the Act.

Punishing False Representations to Settlers.—An Act of Feb. 23, 1917, provides for the punishment of persons who willfully and falsely represent to intending purchasers or entrymen of public lands for a consideration that a particular tract of land is public land of the United States subject to sale or that it is of a particular description. Violation of the law is made a misdemeanor, subject to fine not exceeding $300 or imprisonment for a term not exceeding one year or both. This Act, it is hoped, will aid materially in protecting homeseekers, who have been frequently swindled in the past by persons who make a business of locating them for a fee and who frequently mislead them by false statements.

War Relief for Entrymen.—The declaration of war in April, and the subsequent draft of young men for military service will have the effect of seriously interfering with the completion of many entries made by men subject to draft; especially as the homestead laws require practically continuous residence upon land entered. In cases in which an entryman who has previously made an entry of public lands, goes into military or naval service, credit will be given for such service, although at least one year's residence and improvement will be required on homestead entries before patent is issued. Provision is made also to protect the interests of the soldier and sailor who has actually made application for entry which has not yet been allowed.

Disposal of Lands Valuable for Potash.—An Act of Oct. 2, 1917, authorizes the Secretary of the Interior to give permits for exploring lands supposed to contain various forms of potash. The permit may cover not exceeding 2,560 acres of land in reasonably compact form. If valuable deposits of potash are found within the area, the permitee may upon proper proof secure patent for not to exceed one-fourth of the land embraced in his permit. The remaining area shall be subject to lease by the Secretary of the Interior upon competitive bidding or otherwise as he may direct. The Act makes provision to prevent the monopoly of such potash beds, and also for the use of such additional lands as may be needed for camp sites, refining works, etc. Another provision of the Act authorizes the Secretary of the Interior to lease certain lands in and adjacent to Searles Lake in California which are known to contain valuable potash deposits, and also certain similar lands in Sweetwater County, Wyoming. The Secretary of the Interior under this authority may be instrumental in bringing to market large quantities of this valuable fertilizer material, of which until recently Germany was our principal source of supply.

National Parks and Monuments.—In 1917 the administration of the national parks was put upon a permanent basis in pursuance of an Act of Aug. 25, 1916, to establish a National Park Service. This had not been made effective before because no appropriation had been made for such an organization. The Sundry Civil Appropriation Act of June 12, 1917, provided for the necessary officers and administrative assistants. No new national parks have been established; the public, however, has used those heretofore established more than ever, the number of visitors in the fiscal year 1917 being 487,368, as against 358,000 in 1916. There are 16 national parks, comprising an area of nearly 5,000,000 acres, and there are 34 national monuments, comprising an area of about 1,200,000 acres.

Disposition of Public Lands.—The total area of public and Indian lands originally entered and allowed during the fiscal year ending June 30, 1917, was 16,201,794.38 acres, a decrease of 2,841,358.54 acres as compared with the area entered during the fiscal year 1916. The area patented during the fiscal year ending June 30, 1917, was 11,313,362.24 acres, a decrease of 848,445.75 acres as compared with the fiscal year 1916. Of the above area, 7,544,055.27 acres was patented under the homestead laws, a decrease of 179,682.96 acres, not including as homesteads 22,464.50 acres patented as soldiers' additional entries.

The total cash receipts from the sale of public lands, including fees and commissions and sales of Government property, for the fiscal year 1916 were $3,632,192.89, as compared with $3,428,588.20 in 1916, an increase of $203,604.69. The total receipts from the sales of Indian lands were $2,445,582.52, as compared with $2,000,516.17 in 1916. Other receipts aggregated $71,855.13. The total receipts on account of the operations of the General Land Office during the fiscal year 1917 were $6,149,630.54 (1916, $5,470,466.81), an increase of $679,163.73 over 1916.

MINERAL RESOURCES

U. S. GEOLOGICAL SURVEY

George Otis Smith

Geological Investigations.—During the greater part of the year the activities of the U. S. Geological Survey have been concentrated upon lines of investigation connected with military and industrial preparedness. This mobilization has included preparation of special reports for the use of the War and Navy Departments or the Council of National Defense, the making of military surveys, the investigation of water supplies for the Army, the printing of military maps and hydrographic charts, and the contribution of engineers to the Officers Reserve Corps. In geologic work the mobilization has involved investigations of oil fields and the publication or preparation of nearly two score of reports pointing out areas believed to be favorable for drill tests. Field examinations have been made also of the great oil-shale formations of Colorado and Utah as constituting the petroleum reserves of the United States. Work too has been prosecuted on the intensive field study of deposits of "war minerals", such as manganese, pyrite, platinum, potash, antimony, chromite, etc. In addition, geologic investigations of mineral deposits of all kinds have been continued. This work was carried on by 134 geologists in 47 states, the Canal Zone and the West Indies, including detailed geologic surveys covering 6,701 sq. miles and reconnaissance surveys covering 35,201 sq. miles. (See also XXII, *Dynamical and Structural Geology*, and *Economic Geology*.)

The entrance of the United States into the war increased the growing demand for information concerning our mineral reserves, and this type of governmental assistance to American enterprise has never been more evident than during this period of expansion of the productive capacity of mine and smelter. Mid-year statements covering the first half of the production for 1916 of some of the principal minerals were published early in the fiscal year, and to meet the increasing demand a bulletin entitled "Our Mineral Supplies" has been prepared. During the year the Survey instituted the issuance of monthly summaries of petroleum statistics, monthly statements of rail shipments of coal and coke, and weekly statements of coal production.

Topographic Surveys and Maps.—In topographic surveys areas amounting to 22,480 sq. miles were mapped in 31 states, 16 of which coöperated in the work. The technical force numbered 155. Increasing appreciation of the military value of the topographic surveys led to the formation of the Division of Military Surveys in the Topographic Branch and later resulted in plans for the work being made to conform wholly to a programme drawn up by General Staff of the Army. By June 30 8,192 sq. miles of areas selected by the Army had been surveyed, and the work is still in progress. War conditions not only diverted practically all of the activities of the Topographic Branch to the urgent needs of the War Department for military surveys, but also brought about the commissioning of the majority of the technical personnel of this Branch as reserve officers in the Corps of Engineers, U. S. A. On Oct. 1 the number of Survey representatives holding commissions aggregated 79, of whom 37 were already in France or had been selected for service there. Two of the officers in France have been appointed on General Pershing's staff, Major A. H. Brooks as geological engineer, and Major Glenn S. Smith as topographic engineer. (See also XXII, *Dynamical and Structural Geology*.)

A large contribution to the military service has been made by the map printing establishment of the Survey. This has been available for both confidential and urgent work, and during the year 96 maps needed for military use were printed for the War Department and 906 editions of charts for the Navy.

In Alaska 12 field parties covered 5,736 sq. miles with geologic surveys and 9,765 sq. miles with topographic surveys, besides investigating special problems in productive mining industries.

Land Classification.—Land classification in the West continued to be a utilitarian service of the Geological Survey, and during the year there was a total classification of more than 18,000,000 acres. Lands aggregating 1,321,939 acres were classified as to coal character, of which 370,449 acres was appraised as coal land and made available for purchase. New withdrawals of 903,791 acres of oil lands were made, and 176,311 acres previously withdrawn were restored to entry. Areas amounting to 2,530,309 acres were classified as oil-shale land, and two oil-shale reserves aggregating 132,024 acres were created for the benefit of the Navy.

Classification of phosphate land resulted in the restoration as non-phosphate land of 80 acres of public land and the classification as phosphate land of 24,656 acres of Indian lands. Other areas amounting to 103,115 acres, chiefly within former or existing Indian reservations, were classified as to their content of minerals.

During the year 13,133,851 acres in 14 states were classified as non-irrigable and were so designated under the enlarged-homestead acts. The total area thus designated to date amounts to 275,633,861 acres.

The Survey's New Home.—The completion of the new Interior Department office building made it possible for the Geological Survey to occupy its new home in May. This marks the culmination of the efforts of three directors of the Survey to secure quarters adequate and safe both for the Survey workers and for the large accumulation of scientific records. The new building provides 50 per cent. more floor space than the old rented quarters, and all of this devoted to offices, laboratories or work rooms is well lighted.

The new building was authorized on March 4, 1913, and ground was broken on Aug. 16, 1915, the building being completed about two years later. The approximate cost was $2,500,000, and it is the largest public building in the United States on the basis of floor space. It includes approximately one-half million square feet of net floor space, accommodating the office of the Secretary of the Interior, the General Land Office, the Office of Indian Affairs, the Bureau of Mines, National Park Service and Alaskan Engineering Commission, as well as the Geological Survey, which, with its library and map-printing establishment, occupies nearly one-third of the building.

STATE GEOLOGICAL SURVEYS

William O. Hotchkiss

Activities and Resources.—Thirty-eight states maintained geological surveys during 1917. Owing to inadequate appropriations, however, there was considerable decrease in activities. Curtailment of funds caused embarrassment in Arkansas and South Carolina. The Arizona Geological Survey was discontinued, and all the geological work now being done in that state is carried on by the Geological Department of the University of Arizona. Raymond Moore was appointed state geologist of Kansas to succeed W. H. Twenhofel. The chief function of the state surveys continues to be the collection and dissemination of information with reference to mineral resources and geological structure, but many also have charge of road building, forestation, water-power development, soil improvement and natural-history study. During 1917 the state surveys expended approximately $500,000, and received the benefit of about $75,000 additional funds from coöperating Federal and state departments. About 125 scientists were employed during the year, with approximately 30 others furnished by coöperating bureaus. In addition a large force of topographers and soil experts were engaged in making coöperative maps.

Special Activities Relating to the War.—In common with all official organizations the state surveys have been doing much work having special application to war purposes. In many states nearly the whole summer's field work was devoted to these ends, and special searches were made for minerals which heretofore have been imported either wholly or in part. Cantonments and training camps were the subjects of special field work in all states in which they are located. A special subcommittee of the Committee on Geology and Paleontology of the National Research Council was appointed to organize this work, and as a result special reports and maps have been published or are being prepared by the various state surveys for the instruction of the officers and men in the camps. (See also XXII, *Dynamical and Structural Geology.*)

Chromic iron ore was the object of field search in Maryland and California. Coal, oil and gas resources were studied in nearly all those states suspected or known to have deposits, for the purpose of encouraging and directing new explorations and conserving known deposits; the most important work along this line has been done in West Virginia, Tennessee, Oklakoma, Kansas, Wyoming, South Dakota, Texas, California and Washington. Fluorite suitable for optical purposes was found in Illinois as a result of the search of the state survey. Graphite was the subject of special field study in New York, where important discoveries were made, and in Alabama. Manganese ores were diligently sought by the Surveys of New York, Virginia, North Carolina, Georgia, Tennessee, Mississippi, Missouri, Oklahoma, California and Washington. Mica was studied for war supplies in Alabama. Molybdenum ores were the object of search in New York and California. Pyrites for the manufacture of sulphuric acid were investigated in New York, Virginia, West Virginia, North Carolina, Georgia, Alabama, Tennessee, Mississippi, Missouri, Oklahoma, Illinois and Wisconsin. Road materials were mapped in great detail as to location, quality and quantity in the border states, in conjunction with the state highway departments. Sand for industrial purposes and for optical glass was investigated in Illinois, Wisconsin, Michigan, Ohio, West Virginia and Virginia. Tungsten ores were studied in Missouri, California and Colorado. Water Supplies were carefully studied coöperatively by the U. S. Geological Survey and the state surveys of the Atlantic and Gulf states.

Topographic Maps. — Topographic maps were completed in coöperation with the U. S. Survey as follows: 1,924 sq. miles in Florida, 400 sq. miles in Michigan and 800 sq. miles in Washington. The Columbus quadrangle and the Leavenworth quadrangle were completed in Kansas. Several quadrangles were completed in the vicinity of Camp Grant at Rockford, Ill. Activity in the making of topographic maps on the part of both the state surveys and the U. S. Geological Survey has been greatly stimulated by the declaration of war, but this work has been confined almost wholly to Atlantic, Gulf, Mexican and Pacific border states. (See also *U. S. Geological Survey, supra.*)

Economic Geology.—The expenditure of state funds for geological surveys continued to be directed chiefly to the discovery and development of materials of commercial value. Many theoretical and educational studies were made in connection with this main activity. Practically all state surveys published mineral statistics for the year. This work is under the direction of the U. S. Geological Survey and constitutes the most reliable index to activities in mining and metallurgy. Other economic investigations of the year are summarized in the following paragraphs.

Minerals and Stones for the Arts and for Building Purposes.—The difficulty or impossibility of making imports of foreign material has served to stimulate the search for suitable domestic deposits of non-metallic mineral products as well as of the metals. A highly refractory kaolin possessing the desirable quality of plasticity was discovered in Illinois and served to replace German kaolin, which formerly was the only supply. A report on these deposits was published by the Illinois Survey which also completed the field studies of the lead, zinc and fluorite district of the southeastern part of the state, and investigated the Ottawa sand, finding it to be suitable for the manufacture of optical glass when properly washed. In Tennessee a report on the "Gravels of the West Tennessee Valley" was published, and reports on marble, phosphates, barytes, nitre in caves, limestones for fertilizers and zinc are under way. New York completed a special resurvey of deposits of pyrite (report published), zinc, graphite, molybdenum and manganese. Georgia issued a bulletin on "Bauxite and Fuller's Earth" of the Coastal Plain. Alabama completed field work on deposits of graphite, pyrite and mica. Maryland conducted studies of the flint clays in Garrett and Allegany counties and also on the feldspar and chromite deposits. Oklahoma published bulletins on lime resources and on tripoli deposits. Virginia printed a comprehensive report on the manganese deposits of the state and one on the clays of the Piedmont region. Texas published a bulletin on the Rustler Springs sulphur deposits; a report on road materials of the border was made for the Council of National Defense and has been completed by studies of road materials over the whole state. Ohio published a report on the southern part of the state, including Jackson and Lawrence Counties and parts of Pike, Scioto and Gallia, which covers the coal, oil, gas, clay, limestone, sandstone and iron ore resources of this area. The sands of the state were investigated for the purpose of finding their uses in the iron and steel industries. West Virginia published a report on the three eastern panhandle counties, Morgan, Berkeley and Jefferson, and also a report on Braxton and Clay counties, in which the coal, oil, gas, clay, salt, limestone, slate, tripoli sand, glass sand, cement materials, road materials, iron ores, sand and gravel, and mineral waters are described. A map of the state was published, showing the location of iron ore, limestone, coal, oil and gas. California issued reports for more than 20 counties, giving details of their wonderfully diversified and rich mineral resources.

Coal and Peat.—In Washington reports were prepared on the coal areas of Lewis, Cowlitz and Thurston counties. Tennessee has a report on coal under way. Illinois published a report on the coal resources of Jackson County, and completed field work for 250 sq. miles in the Rock Island region and for 750 sq. miles along the border of the coal field in the northern and western parts of the state. West Virginia and Ohio general reports are noted above.

Oil and Gas.—The governor of California appointed a special commission which made a comprehensive report on the oil and gas situation in that state and made recommendations as to future public policy relating to these resources. Oklahoma published the second part of a very comprehensive detailed report on the oil and gas of the state by counties. Kansas has in press a general report on oil and gas resources. Illinois completed the survey of 1,000 sq. miles in the vicinity of McDonough County in the search for oil and gas structures, and supplementary surveys were made near the Carlyle oil field in Clinton County, where oil had been discovered in the Irishtown anticline, which previously had been recommended by the Survey for drilling. A report on the undrilled areas in present producing fields was made in response to a request from the Federal Government in order to indicate the possibilities of increased production. Missouri carried on field studies in the search for favorable structures in the northwestern part of the state, and Wyoming also continued its search for favorable areas for drilling. Texas published a report on the Thrall field in Williamson County. South Dakota investigated the oil possibilities along the Missouri River from Pierre north to the state line, and also in two small areas in Corson County. The general reports for West Virginia and Ohio, mentioned above, report on oil and gas resources in great detail.

Iron, Lead and Zinc.—The detailed magnetic and geologic survey which has been in progress for five years in Wisconsin was continued, and 16 townships in Jackson, Wood, Clark and Portage counties were completed. Drilling with encouraging results has been in progress all year in the favorable localities. A report on the Wisconsin end of the Gogebic iron range is in preparation. The work in Minnesota was continued by further studies of the Cuyuna range. Tennessee has a report on zinc in preparation. Illinois completed the field surveys of the zinc, lead and fluorite district of the southeastern part of the state.

Detailed Areal Surveys.—Detailed surveys of the rock formations of large areas were in progress in many states, some of which have been noted already in other connections. Many of these surveys are general in nature and include the collection of information on all geologic aspects and the useful mineral resources. In 1917 New York made surveys of the western Adirondacks, in the Catskills and in the valleys of the Hudson and Mohawk rivers. Vermont carried on work of this character, and Connecticut conducted work on six quadrangles. Maryland completed the field and office studies on the Cambro-Ordovician. Florida completed field work in three counties. Alabama finished the mapping of Clay County. In Tennessee a report on Rutherford County was completed. In Wisconsin field work was completed on the Sparta and Tomah quadrangles and detailed areal work was also carried on in connection with the economic survey in the central part of the state (see *supra*). Illinois completed five quadrangles (about 1,250 sq. miles) in the northern, western and southern parts of the state. Texas published a report on the geology of the state and carried on detailed areal surveys in Hays, Bexar and Taylor counties.

Stratigraphic and Paleontologic Geology.—The detailed areal surveys mentioned above are all accompanied by more or less detailed stratigraphic and paleontologic studies, and the reports contain much information on these subjects. Other work having more emphasis on the determination of the sequence of formations and their fossils may be noted. In Illinois and Missouri studies of the rocks of Mississippian age were carried on in harmony with the programme agreed upon in a conference of the states interested. In Illinois extensive studies were made of drill cores from various areas in the coal measures, and structural studies in the region of the La Salle anticline were continued. New York carried on special investigations of the fauna of the Lorraine division, and prepared reports on the fossil sponges, the Devonian fishes and the Devonian crinoids. Maryland carried on field studies on the Triassic. Tennessee completed the field work for a report on the Devonian of the western part of the state. Ohio finished the field work in Muskingum County; the mapping of the junction of the Ordovician and Silurian was completed and work started on the Ordovician of the southwestern part of the state and the Silurian of the western part. In coöperation with the U. S. Geological Survey Mississippi carried on detailed studies of the Claiborne formation. Michigan continued field work on the Niagaran and Cincinnati groups. In Wisconsin work was continued on the general stratigraphy of the state in coöperation with the U. S. Geological Survey, and field work was started on the later Paleozoic rocks of the eastern part. Texas published a paper on the *Richthofenia* of the west-Texas Permian, and prepared reports on the Paleozoic of the Marathon region and on the Cephalopods of the Permo-Carboniferous and its correlation with the Anthracolitic of other parts of the world. In Washington collections of Tertiary fossils were made.

Miscellaneous Maps and Investigations.—Maryland has been very active in furnishing to the War Department data relative to physical conditions for the cantonment and proving ground and for other purposes. North Carolina has published a volume on the birds of the state, a bulletin on altitudes and a paper on the vegetation of Shackleford County. West Virginia published two state maps, one showing railroads and the other showing the state's resources of coal, oil, gas, iron ore, and limestone. Tennessee completed traverse work in Henderson and Bedford counties and started similar work in Maury and Carroll counties. Michigan continued the work of valuing mines and mineral lands for purposes of assessment. An interesting feature of the work this state survey is doing is in connection with the "blue-sky" law, under which it is called upon to investigate properties for stock and bond projects for the exploitation of raw mineral resources. Illinois published a new state geological map, maps of the La Salle and Hennepin quadrangles, a key map showing progress in topographic and geologic work, and a geologic map of the Starved Rock State Park. In Wisconsin the work of valuing mines for assessment was continued. Studies were begun for a geographic bulletin on the Lake Michigan shore. The lake work was continued on the usual scale, and comprised careful quantitative measurements of the life present and determinations of the proportions of the various species. South Dakota completed a report on the geography of the state. Oklahoma printed a report on the "Geology of the Redbeds".

Surface and Underground Waters.—The importance of knowledge of water supplies for military camps stimulated the study of these resources in the border states, much of it in coöperation with the U. S. Geological Survey. Connecticut completed a report on the Suffield, Glastonbury and Norwalk areas. Maryland has in press a comprehensive report on its water resources. Extensive stream-gauging work has been carried on in coöperation with the U. S. Geological Survey in Washington and in Wisconsin, where the state agency is the Public Utilities Commission, which has regulatory powers over water-power developments. In Alabama the Survey has continued its analytical work on spring and well waters.

Soil, Forest, and Highway Investigations.—In Maryland soil maps of two counties, aggregating 1,103 sq. miles in area, were completed in coöperation with the U. S. Bureau of Soils. North Carolina devoted much attention to highway and forestry matters and to the administration and improvement of the Mitchel State Park. In Wisconsin the coöperative soil work was continued vigorously; detailed reports on five counties were published and field work carried on in others. Mississippi completed a detailed soil map of an area about 750 sq. miles. The soil map of Spokane county was completed in Washington.

RECLAMATION

FRED G. HARDEN

The Reclamation Service.—The Sundry Civil Appropriation Act approved June 12, 1917, authorized the expenditure of $8,227,000 and the unexpended balances of the sums appropriated in 1916 upon the several projects of the Reclamation Service during the fiscal year 1918. The Act provided for the taking over of and the expending of $200,000 on the King Hill project, a Carey-Act project which the state of Idaho was compelled to take over a few years ago. The Act also amended the Act of June 25, 1910 (36 Stat. 835) governing the repayment of the bond loan to the Service by providing that beginning July 1, 1920, $1,000,000 a year is to be transferred from the Reclamation Fund to the general fund of the Treasury until all the advances made from the bond-loan fund have been repaid.

During the year the reports of the central revaluation board for several of the reclamation projects have been published. That for the Salt River Project recommended the deduction of $382,408 from the amount to be paid by the landowners, and fixed the building charge at $60 per acre; it also disapproved the suggestion that the Government put in a drainage system. The report for the Rio Grande Project fixed the building charge at $60 per acre, and recommended that the Government give assistance in selling the excess holdings in the Project. That for the Uncompahgre Project fixed the building charge at $60 per acre, and recommended that the lands be divided into three classes on the basis of the time required to reclaim them, and that legislation be enacted permitting the first payments for lands of classes two and three to be deferred five and 10 years respectively from the date on which the lands are filed upon. The report for the North Platte Project set the building charge at $55, and recommended that a coöperative arrangement be entered into by the Reclamation Service and the state of Nebraska whereby the levelling, seeding, watering, etc., of certain sandy lands should be done by the Service and the Nebraska Experiment Station, the settlers to repay such part of the costs as the Experiment Station should adjudge fair, the balance to be paid by the Service.

During the fiscal year ending June 30, 1917, the estimated area included in projects was increased by 64,833 acres; the area for which the Service was prepared to furnish water, by 107,567 acres; the area under water contracts, by 68,236 acres; the capacity of reservoirs, by 168,640 acre-ft.; and the mileage of canals, by 453 miles. Over 9,648,000 cu. yds. of excavation was done, and 317,239 cu. yds. of material was placed in dams and 240,084 cu. yds. in dikes and levees. It is estimated by the Service that in 1918 it can supply water to 1,760,000 acres of which 1,160,000 acres can probably be cultivated. One hundred thousand acres of this area capable of cultivation is vacant public lands and 500,000 acres private or entered lands.

The expenditure upon projects during the fiscal year 1917 was $6,468,599.83. The total cash collections were $3,213,483.23, the chief items of which were: temporary water rentals, $887,327.45; power and light, $462,992.40; construction charges, $650,094.56; maintenance charges, $525,548.71; and miscellaneous sales and services, $649,147.27. The total receipts of the Reclamation Fund from all sources were found to be $7,650,384.72.

The Service was prepared to furnish water during the crop year 1916 to 1,426,015 acres on its own projects and to 177,623 acres of other lands. Of this area 925,814 acres on its own projects and 48,106 acres of the other lands were irrigated, and 856,566 acres on its own projects were cropped, the total value of the crops being $32,767,790. The following table shows the acreages of the different crops and the average values of the crops per acre:

Crop	Acreage	Average Value Per Acre
Cereals	223,555	$24.00
Alfalfa seed	21,238	28.00
Other grains and seeds	16,701	30.00
Alfalfa hay	331,323	34.00
Vegetables and truck	29,743	131.00
Fruits and nuts	32,825	84.00
Sugar beets	29,328	64.00
Cotton	13,424	88.00
Total	757,187	$60.35

War has meant the raising of prices in a great many things, and it is largely due to this abnormal condition that there has been an increase of value per acre. The following table based upon the averages from about three-fourths of the harvested area on the projects shows the increase in prices over 1916:

Crop	1916	1917
Cereals, bu.	$0.65	$0.95
Alfalfa hay, ton	6.59	10.58
Potatoes, bu.	0.45	0.93
Sugar beets, ton	5.47	6.14
Cotton, lb.	0.16	0.24

During the fiscal year the Service furnished 117,258.4 acre-ft. of water to lands under contracts made under the Warren Act (36 Stat. 925), as follows: Boise Project, 2,226 acre-ft.; Minidoka Project, 69,111 acre-ft.; North Platte Project, 45,153 acre-ft.; and Strawberry Project, 768.4 acre-ft.

Up to the end of the fiscal year 1917 the Service had constructed more than 416 miles of open drains and 147 miles of closed drains. The area on the projects already damaged by seepage is estimated as 142,768 acres. It is estimated that the drains constructed will protect 205,259 acres and that those authorized will protect approximately 370,000 acres.

The Service was influential in getting new or amendatory irrigation-district legislation passed in the states of Arizona, California, Colorado, Idaho, Montana, Nebraska, New Mexico, Oklahoma, Oregon, South Dakota, Texas, Utah and Washington, making the changes necessary to enable irrigation districts to contract with the United States and to permit irrigation districts to be organized to replace the water-users' associations on the Reclamation-Service projects. The legal division of the Service during the year completed an investigation of the water-rights situation in the Colorado River basin, which included a digest of the laws and decisions, a study of the international and interstate questions, a determination of the acreages irrigated, etc. Since the beginning of the war the service has laid much stress upon the possibility of increasing food production by government assistance in bringing the lands to which the Service can furnish water under cultivation, and has proposed several plans for this purpose.

Carey Act.—During the fiscal year ending June 30, 1917, segregations for 6,116.32 acres were applied for under the Carey Act (August 14, 1894), 29,121.38 acres were rejected or re-

IRRIGATION PROJECTS OF THE U. S. RECLAMATION SERVICE

State	Project	Appropriation, Fiscal Year 1918	Irrigated Acreage, Crop Season 1916			Average Value Crops per Acre
			Acreage Service Could Supply	Acreage Irrigated	Acreage Cropped	
Arizona	Salt River	$158,000	219,691	192,464	173,359	$48.65
Arizona-California	Yuma	500,000	72,440	29,483	28,283	50.75
California	Orland	43,000	20,533	9,357	7,011	48.83
Colorado	Grand Valley	192,000	15,000	1,741	1,561	35.03
	Uncompahgre	398,000	77,713	49,273	48,352	40.32
Idaho	Boise	396,000	103,370	76,922	72,581	32.07
	King Hill	200,000	....	....	....	......
	Minidoka	222,000	120,800	88,333	81,362	34.50
Kansas	Garden City	1,000	....	....	....	......
Montana	Huntley	171,000	32,905	18,635	18,581	26.32
	Milk River	330,000	40,358	5,518	4,592	15.25
	Sun River	128,000	16,321	4,717	4,700	18.50
	Lower Yellowstone	38,000	42,288	6,020	6,020	20.70
Nebraska-Wyoming	North Platte	1,170,000	112,016	75,620	74,766	21.85
Nevada	Truckee-Carson	795,000	69,100	39,449	38,249	20.70
New Mexico	Carlsbad	64,000	24,775	16,600	14,500	27.58
	Hondo	....	2,918	1,324	1,219	26.42
Texas-New Mexico	Rio Grande	648,000	85,000	62,513	61,818	46.81
North Dakota	North Dakota Pumping	54,000	....	....	....	......
Oklahoma	Lawton	101,000	....	....	....	......
Oregon	Umatilla	157,000	17,000	5,477	3,900	35.84
Oregon-California	Klamath	239,000	45,272	29,351	29,351	17.37
South Dakota	Belle Fourche	274,000	78,567	48,468	46,909	11.88
Utah	Strawberry	170,000	50,000	30,722	25,066	52.70
Washington	Okanogan	32,000	10,099	7,850	5,242	62.64
	Yakima-Sunnyside	1,144,000	93,226	73,000	59,449	73.04
	Yakima-Tieton		34,000	23,000	21,000	52.50
Wyoming	Shoshane	252,000	42,623	29,977	28,695	20.94
Coöperative and secondary projects		50,000	....	....	....	......
Total Reclamation Service projects		$3,227,000	1,426,015	925,814	856,566	$38.25
Additional lands[1]:						
Idaho	Boise	....	120,496	24,518	....	......
Colorado	Uncompahgre	....	22,287	5,000	....	......
Nebraska-Wyoming	North Platte	....	17,840	8,588	....	......
Texas-New Mexico	Rio Grande	....	17,000	10,000	....	......

[1] Mostly private companies and irrigation districts supplied with water under the Warren Act.

linquished, and 42,063.55 acres were patented. Under the act for temporary withdrawals (March 15, 1910) applications for the withdrawal of 10,782.65 acres were made, 48,629.27 acres were withdrawn, and 85,833.23 acres were restored, leaving 290,871.47 acres still withdrawn on July 1, 1917.

U. S. Department of Agriculture.—The amounts carried by the Agricultural Appropriation Act approved March 4, 1916, for the different investigations along the lines of irrigation and drainage were practically the same as for the fiscal year 1917 (*A. Y. B.*, 1916, p. 281), except that the amount for demonstration and advice to settlers on government projects was increased from $40,000 to $50,000.

Private Irrigation.—There has been considerable private irrigation development during the year, notwithstanding the high cost of labor and materials. This activity has been most noticeable in the Pacific coast states. In California the Public Utilities Commission, the Water Commission and the University of California have all been very active in encouraging the cropping of the lands now under canals and the building of new canals to bring other lands under water. The most noteworthy project instituted during the year was the King River irrigation project, which contemplates bringing all the irrigated lands along that river under one conservation district. The present systems, which can supply water to 600,000 acres, consist of irrigation districts, private companies and mutual companies. The new system which is to be constructed under the state Irrigation Board will irrigate 1,000,000 acres. The works contemplated include the Pine Flat reservoir, with a capacity of 600,000 acre-ft. and having an arched masonry dam 1,400 ft. long and 305 ft. high, and 605 electrically equipped pumping plants of two second-feet capacity each and capable of developing 300,000 acre-ft. of water during the irrigating season. The estimated total annual supply which will be provided by the system is 2,000,000 acre-ft., and the estimated cost of the project is $9,530,000. A contract has been entered into also by the Secretary of the Interior and the Imperial Laguna Canal Co., looking to the irrigation of from 120,000 to 200,000 acres adjoining the Imperial Valley by an all-American canal taking water from the Laguna Dam of the Reclamation Service. In Washington an issue of $18,000,000 of bonds was voted by the Horse Heaven Irrigation District for the completion of its system. About 215,000 acres can be watered in this project at a cost of $45 per acre or 300,000 acres at a cost of $87 per acre if reservoirs are built. The system will consist of two pumping plants and 150 miles of main canals. The original plans included also seven reservoirs. In Oregon the Ochoco project in Crook County has sold $900,000 of bonds with which to complete its 22,000-acre project.

Irrigation Legislation and Judicial Decisions.—Practically all the States in the irrigated section made changes of greater or less importance in their irrigation laws during the year. Changes in the irrigation-district laws to provide for coöperation with the United States have already been noted. In California the Water Commission was forbidden to allow water to be appropriated for use in another state unless the other state permits appropriations for use in California, and amendments and additions were made to the Water Commission Act of 1913, those pertaining to the ascertainment and adjudication of water rights being of special importance. Private and mutual water companies were authorized to deliver water to others than stockholders during the war without thereby becoming public-utility companies. Districts the bonds of which have been certified to by the commission created in 1913 were forbidden to make expenditures from construction funds unless such expenditures are approved by the commission. State lands included in irrigation districts may be taxed, but there is no liability on the part of the state to pay such taxes. Practically every section of the California Irrigation Act of 1915 was amended and several new sections were added. The most important changes were those enabling the state Irrigation Board to consolidate irrigation, reclamation, or drainage districts, irrigation companies, etc., into single districts to be known as conservation districts. The Irrigation Board is to have charge of the financing and the construction work in such conservation district, assisted by an advisory board composed of the chairmen or presiding officers of the districts and other organizations contributing to the cost of the conservation district. Bonds of the conservation districts are to be placed with the state treasurer and sold upon the order of the Irrigation Board, and are legal investments for banks, trust funds and public funds.

In Colorado it was declared unlawful to divert water for use in another state and $37,500 was appropriated for the investigation and defense of water rights against attack by other states or the citizens thereof. In Idaho irrigation districts were empowered to buy and sell state lands within their boundaries, and Carey-Act companies were required to file annually with the state Board of Land Commissioners for their approval a statement of proposed expenditures and the levies proposed to be made on each acre or share for operation and maintenance. In Oregon a new irrigation-district law provides for field investigations by the state engineer and approval of the plans for the system by him; that corporations shall have a vote; that water may be furnished to lands not assessed in the district; that irrigation districts may provide drainage; and that a commission composed of the attorney-general, the state engineer and the superintendent of banks shall investigate and report upon the feasibility of each project and determine whether the value of the lands, systems, etc., will be twice the amount of bonds that will be outstanding if the issue is approved; if the commission approves, the bonds are then legal investments for bank, trust, insurance and public funds.

In Utah a Water-Rights Commission was created to investigate the irrigation conditions in the state and the irrigation laws in the state and other states, and to prepare and submit a new water code to the next legislature. A new irrigation-district law provides that the governor, upon the suggestion of the state engineer on the petition of a certain number of land owners, may propose the organization of a district; that the state engineer shall make a water survey and allot the water to the lands; that the cost of the survey, etc., shall be paid by the state and county if the organization of the district does not go through; and that the governor upon the recommendation of the state engineer may withdraw waters of a stream from appropriation for a period not exceeding five years. In Washington a water code was passed, in which the supervision of the appropriation and use of public waters, the regulation and control of diversions and the inspection of works are placed under a state hydraulic engineer. In determining existing water rights, the hydraulic engineer is required to file a statement, maps, etc., with a superior court, which then issues a summons to all persons claiming rights from the stream in question. The taking of testimony is then referred to the hydraulic engineer, who files a transcript of the testimony with the court, which then sets a time, holds a hearing, and enters a decree. The irrigation-district law was amended so as to permit the formation of sub-districts to make local improvements, the cost of which are to be paid for by warrants of the district, the funds to be raised from assessments on the lands benefitted. In Wyoming it was provided that stored waters might be exchanged for the direct flow of a stream, the exchange to be made under the supervision of the state water officials.

The constitutionality of the Nevada water law, which confers supervisory power over the distribution and use of public waters upon the state engineer, was upheld by the U. S. District Court (Bergman *et al.* *v.* Kerney, State Engineer, (241 Fed. 884). The U. S. Supreme Court (243 U. S. 15) upheld the decision of the Supreme Court of Nebraska in the case of Enterprise Irrigation District *et al.* *v.* Farmers Canal Co. *et al.* (92 Nebr. 121), in which the Nebraska law of 1895 authorizing the determination of water rights by the state Board of Irrigation was held constitutional. The U. S. Supreme Court also restored the case of the State of Wyoming *v.* State of Colorado (*A. Y. B.*, 1916, p. 282) to the docket for reargument (243 U. S. 622). The same court in O'Neil *v.* Northern Colorado Irrigation Co. (242 U. S. 20) upheld the Colorado statute barring the contesting of a water priority unless the suit is brought within four years of the rendition of the decree.

Drainage.—Drainage development in the humid sections has experienced but little change during the year. The market for drainage-district bonds, however, has begun to be affected by the war. In the irrigated sections the need of drainage is becoming more urgent each year. Combined with the high prices for farm products, this has resulted in considerable activity in both private drainage and the organization of drainage districts. The construction of systems has been very much handicapped in the West by the shortage of materials and the high price of labor.

The $15,000,000 worth of bonds of the Miami (Ohio) Conservancy District offered for sale in December was subscribed for at par and accrued interest. Bids for $10,000,000 of the $25,000,000 project of the district were called for in November but only one small contract was let, all other bids being rejected (see also XX, *Civil Engineering*). The Franklin County (Ohio) Conservatory District as originally planned has had to be abandoned, as the district court found that the assessments under the proposed plan would exceed the benefits (see *ibid.*). One of the largest reclamation pumping plants that has been installed was completed during the year in the Sutter Basin in California. The plant consists of six 800-h.p. motors, each of which drives a 50-in. centrifugal pump having a normal capacity of 175 sec.-ft. when operating against a 29-ft. head. The plant will protect 66,000 acres from the flood flow of the Feather and Sacramento rivers.

The Supreme Court of Idaho on rehearing affirmed its former decision (29 Ida. 377 & 396) in Canyon County Drainage District No. 1 *v.* Farmers Coöperative Canal Co. that high lands and canals contributing to the waterlogging of lands in a drainage district may be assessed in the district.

The Supreme Court of California in the case of Sam Grey *et al. v.* Reclamation District No. 1500 (53 Cal. Dec. 367) refused an injunction to prevent the construction of certain levees. The decision upheld the powers of the state Reclamation Board and the plan of flood control for the Sacramento Valley as outlined by the California Debris Commission in 1910 (House Doc. 81, 62d Cong., 1st sess.), which plan was adopted by the state of California and the Reclamation Board formed to carry it into effect.

Drainage Legislation.—New drainage-district laws were enacted in West Virginia and Minnesota. The constitution of Michigan was so amended that it is now possible for drainage districts to sell bonds. Missouri, Iowa, Illinois and Indiana amended one or more sections of their drainage-district laws. North Dakota created a Boundary Drainage Commission to coöperate with adjoining states in investigating and reporting upon the best methods of drainage and flood control on the boundary-line streams of the state. New Mexico provided for the organization of drainage districts composed of lands within Reclamation-Service projects, and created a commission to coöperate with the United States and the states of Colorado and Texas in investigating the possibilities of reclaiming the Rio Grande Valley. Oregon amended its drainage-district law by giving districts the right of eminent domain, and by raising the maximum assessment which can be made for preliminary investigations to $1 per acre; amendments were also passed providing that irrigated lands which contribute water to the waterlogging of other lands may be included in the drainage district and assessed, the carrying away of waste or seepage waters being declared a benefit. Washington amended its drainage-district law by authorizing the consolidation of drainage or diking districts, by allowing drainage districts to control waters developed by their systems provided the water is used or disposed of within three years, and by authorizing the creation of sub-districts for local improvements and the reorganization of districts organized under former laws. The new amendments also provide that districts of less than 500 acres shall have no other supervisor than the county engineer, and the same system may be used in large districts upon the petition of 50 per cent. of the acreage. It was provided also that where the assessment is $25 or less per acre, it must be paid at the time the next general taxes are paid. The schedules to be used in the payment of bonds and assessments were also changed. The Waterways Commission created by Act of Congress approved August 8, 1917 (see *Waterways and Harbors, infra*), for the purpose of bringing into coördination and coöperation the services of the several governmental departments and commissions that relate to waterways and water resources and interstate and foreign commerce, is charged to investigate among other questions, the questions of irrigation, drainage, arid and swamp-land reclamation, flood control, and the storage and conservation of water for agricultural and other purposes.

HIGHWAYS

Andrew P. Anderson

Construction.—The rural public roads of the United States at the present time have a total length of 2,456,000 miles, of which about 300,-

STATE HIGHWAY EXPENDITURES, 1916

State	Source of Funds		Distribution of Expenditures			State Funds Available, 1917 (approximate)	Local Expenditures, 1916, not under State Highway Department (approximate)
	State	Local	Construction		Maintenance of Roads and Bridges		
			Roads	Bridges			
Alabama	$102,422	$83,962	$157,257	$12,747	....	$200,000	$4,000,000
Arizona	441,202	....	246,366	114,549	$28,133	600,000	1,547,019
Arkansas	55,483	[1] 1,683,549	1,683,549	[2]	....	300,000	1,704,855
California[15]	4,285,964	....	2,766,910	....	1,033,564	6,000,000	16,106,470
Colorado	607,628	662,829	851,970	[3] 245,610	126,110	750,000	1,042,751
Connecticut	1,865,948	85,000	377,574	151,469	1,315,028	2,000,000	1,250,000
Delaware	31,000	31,000	60,000	....	....	200,000	450,000
Florida[6]	10,484	....	....	....	....	20,000	4,000,000
Georgia[7]	....	....	....	....	....	[7]	3,750,000
Idaho	100,057	348,061	281,956	92,072	27,534	750,000	1,500,000
Illinois	1,119,202	1,593,953	1,830,855	587,336	33,763	1,500,000	7,643,515
Indiana[4]	....	....	....	....	....	400,000	13,500,000
Iowa[5]	90,821	....	....	....	....	200,000	14,337,056
Kansas[6]	10,000	....	....	....	....	[7]	5,600,000
Kentucky	708,346	1,740,187	2,357,721	[2]	....	750,000	2,000,000
Louisiana	184,533	274,111	401,599	....	14,768	200,000	3,000,000
Maine	1,055,250	453,518	1,034,340	80,519	292,406	1,000,000	1,658,447
Maryland	2,280,000	280,000	1,500,000	300,000	650,000	1,500,000	3,000,000
Massachusetts	2,701,236	447,905	1,620,647	....	1,212,041	3,950,000	3,350,000
Michigan	982,939	2,350,000	3,100,000	[8] 101,176	[9] 32,169	1,500,000	6,750,000
Minnesota	1.390,525	3,376,550	2,865,381	[3] 891,353	793,254	1,500,000	3,975,192
Mississippi[6]	6,500	....	....	....	....	10,000	3,250,000
Missouri	482,860	[7]	279,548	....	193,226	700,000	7,500,000
Montana[6]	26,150	....	....	....	....	150,000	3,449,419
Nebraska	110,000	90,000	....	180,000	....	500,000	4,300,000
Nevada[4]	....	....	....	....	....	140,000	270,000
New Hampshire	414,669	430,742	481,512	24,473	284,224	450,000	1,200,000
New Jersey	1,167,843	2,616,511	673,845	256,350	2,449,158	2,000,000	2,000,000
New Mexico[10]	385,684	43,267	398,952	[2]	....	400,000	400,000
New York	9,409,655	2,441,225	6,025,944	....	4,252,397	12,000,000	[11] 8,050,510
North Carolina[6]	10,000	....	....	....	....	10,000	5,500,000
North Dakota[6]	....	....	....	....	....	200,000	2,711,295
Ohio	2,885,071	3,107,554	4,836,404	....	748,778	3,800,000	7,000,000
Oklahoma	300,000	1,825,000	936,000	650,000	330,000	300,000	1,500,000
Oregon	165,662	290,000	151,091	290,000	....	500,000	5,500,000
Pennsylvania[12]	3,663,352	322,040	478,445	53,951	2,907,498	8,000,000	7,000,000
Rhode Island	543,152	....	....	57,199	439,052	700,000	400,000
South Carolina[4]	....	....	....	....	....	30,000	1,250,000
South Dakota[6]	....	....	....	....	....	[7]	2,708,000
Tennessee	200,000	400,000	350,000	25,000	170,000	750,000	4,000,000
Texas[4]	....	....	....	....	....	500,000	10,500,000
Utah	179,400	725,760	607,700	88,130	96,310	500,000	950,000
Vermont	632,800	250,000	454,200	44,000	340,000	500,000	725,000
Virginia	542,524	1,348,725	1,586,874	163,679	[13] 48,922	800,000	1,800,000
Washington	859,672	2,104,340	2,442,158	[2]	424,529	2,000,000	4,554,330
West Virginia	10,967	....	....	....	....	200,000	5,500,000
Wisconsin	950,000	4,120,764	3,631,026	1,004,738	210,000	1,500,000	5,500,000
Wyoming[4]	....	....	....	....	....	50,000	450,000
Total	40,969,001	33,526,553	44,469,824	[14] 5,414,331	18,452,861	60,010,000	198,138,859

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[1] Local bond issues by highway districts. [2] Included under roads. [3] Includes culverts. [4] State highway department established in 1917. [5] General supervision of all highway work. [6] State highway department educational and advisory. [7] No data. [8] On trunk line roads only. [9] State reward funds to counties. [10] Approximate, exact data not available. [11] Includes $1,990,575 state aid to towns. [12] Does not include $712,500.93 paid as cash bonus to second-class townships. [13] Includes $13,592.37 for 14.77 miles of surface treatment. [14] Partial totals. [15] Does not include $168,026 expended by the state department of engineering in improving 72 miles and maintaining 561 miles of mountain road.

000 miles, or 12 per cent., are improved with some form of hard surfacing. During recent years the total mileage of all roads has remained practically stationary, but the total mileage of surfaced roads has increased at the rate of about 15,000 miles per annum. The year 1917, however, has shown a decrease of about 5,000 miles in this rate. This was due primarily to the scarcity and high prices of labor and materials, together with the refusal of most contractors to accept contracts

STATE HIGHWAY MILEAGE, 1917

State	State and State-aid Roads Built in 1916	Roads Maintained with State Aid, 1916	Total All State and State-aid Roads Built to Jan. 1, 1917	Total All Surfaced Roads in State (approximate)	Total All Public Rural Roads in State	Percentage of Surfaced Roads in State
	Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	
Alabama	[2] 82	......	659	6,000	55,446	10.8
Arizona	70	214	372	375	12,075	3.1
Arkansas	[5] 380	......	534	1,500	50,743	3.0
California	[6] 256	1,153	1,907	12,300	61,039	20.2
Colorado	[8] 2,105	2,603	[7] 7,305	1,800	39,780	4.6
Connecticut	[4] 56	1,432	[3] 1,627	3,100	14,061	22.0
Delaware	6	......	160	275	3,674	8.0
Florida	......	......	......	3,500	17,995	19.4
Georgia	......	......	......	13,000	80,669	15.3
Idaho	[9] 120	380	413	800	24,396	3.3
Illinois	[10] 299	278	767	12,400	95,647	13.0
Indiana	......	......	......	31,000	73,347	42.5
Iowa	......	......	......	1,000	104,074	1.0
Kansas	......	......	......	1,400	111,052	1.3
Kentucky	[11] 811	......	1,611	13,400	57,916	23.2
Louisiana	[12] 160	355	752	2,400	24,563	9.8
Maine	[13] 229	3,402	1,798	3,250	23,537	13.8
Maryland	95	1,450	1,321	2,900	16,459	17.6
Massachusetts	[14] 192	1,100	1,998	8,900	18,681	47.6
Michigan	743	3,000	3,940	9,600	74,190	13.0
Minnesota	[15] 3,769	12,704	10,011	6,500	93,517	7.0
Mississippi	......	......	......	2,600	45,779	5.7
Missouri	[16]	9,000	[16]	7,250	96,041	7.6
Montana	30	......	30	800	39,204	2.0
Nebraska	......	......	......	1,350	80,272	1.7
Nevada	......	......	......	320	12,182	2.6
New Hampshire	104	1,150	1,280	1,900	14,020	13.5
New Jersey	70	2,429	2,054	6,000	14,817	40.5
New Mexico	[17] 315	......	846	550	11,873	4.6
New York	515	6,500	6,765	18,000	79,398	22.7
North Carolina	......	......	......	6,750	50,758	13.3
North Dakota	......	......	......	1,100	68,796	1.6
Ohio	371	1,445	1,299	31,500	86,354	36.5
Oklahoma	1,900	[18] 7,000	1,900	300	107,916	.3
Oregon	39	......	413	4,875	36,819	13.2
Pennsylvania	[20] 243	9,171	1,988	10,500	91,556	11.4
Rhode Island	......	305	325	750	2,170	34.5
South Carolina	......	......	......	3,700	42,226	8.8
South Dakota	......	......	......	750	96,306	.8
Tennessee	150	500	150	8,750	46,050	18.9
Texas	......	......	......	12,000	128,960	9.3
Utah	[1] 586	3,440	3,440	1,500	8,810	17.1
Vermont	180	4,200	2,011	2,100	14,249	14.9
Virginia	[21] 700	......	4,463	5,500	53,388	10.3
Washington	[22] 420	2,100	1,977	5,900	42,428	13.9
West Virginia	......	......	......	1,532	32,024	4.7
Wisconsin	[23] 1,159	......	5,070	14,850	75,707	19.6
Wyoming	......	......	......	520	14,797	3.5
Total and average	16,160	75,311	69,186	287,047	2,455,761	11.6

[1] Includes 428 miles of grading. [2] Includes 14 miles of earth roads. [3] Includes 195 miles of reconstruction. [4] Includes 25 miles of reconstruction. [5] Only engineering and supervision furnished by state. Includes 70 miles of earth roads. [6] Includes 47 miles of earth roads. [7] Includes about 6,300 miles of earth roads. [8] Includes 1,810 miles of earth roads. [9] Includes 106 miles of earth roads. [10] Includes 56 miles of earth roads. [11] Includes 275 miles of reconstruction and 70 miles of earth roads. [12] Includes 64 miles of earth roads. [13] Includes 11 miles of earth roads. [14] Includes 52 miles of reconstruction. [15] Includes 2,186 miles of earth roads. [16] No data. [17] Includes 181 miles of earth roads. [13] All earth roads. [20] Includes 224 miles of resurfacing. [21] Includes 99 miles of earth roads. [22] Includes 110 miles of earth roads. [23] Includes 486 miles of grading.

except on rather wide margins to cover the risk of future price increases. In general the cost of all road work during 1917 was at least 50 per cent. more than corresponding work done two years ago in 1915.

The total expenditures on the public roads and bridges of the United States, aside from all city streets, are estimated at about $290,000,000 during 1917, as compared with a total of $288,000,000 during 1916. From 1904 to 1915 inclusive the annual increase in the expenditures on rural roads and bridges amounted to approximately 12 per cent. over each preceding year. During 1916, however, this increase was reduced to about two per cent., and during 1917 practically no increase has taken place. This reduction is due largely to the reluctance of public officials to increase expenditures when only such limited results can be secured in proportion to the amounts expended. In several states the high prices of materials and labor have led to a material reduction in new construction and more systematic concentration on maintenance of existing roads. In New York State, for example, the work on state and county highways, aside from maintenance, has been devoted during the year almost entirely to the completion of about 900 miles involved in already outstanding contracts.

Legislation.—The more important highway developments during the year have been largely of a legislative and economic character. Of the 43 states in which the legislatures were in regular session, not one failed to pass important highway measures. State highway departments were established in Delaware, Indiana, Kansas, Nevada, South Carolina, Texas and Wyoming, while greatly increased powers and duties were given to already existing state highway departments in Arkansas, Florida, Missouri, Nebraska, North Dakota, South Dakota and West Virginia. Another important feature of the legislation was the increased amount of funds which was voted or appropriated or otherwise made available under the direction of the highway department in most of the states. Many of these measures are directly traceable to the Federal Aid Road Act (*A. Y. B.*, 1916, p. 284), which requires that before a state can avail itself of the benefits of this Act, it shall have a state highway department or some other department or official exercising the functions ordinarily exercised by a state highway department, and that the state or its subdivisions shall meet the Federal funds at least dollar for dollar. At the present time only five states, Georgia, Kansas, Mississippi, North Carolina and South Carolina, have made no direct appropriations for aiding or assisting in the improvement of their highways, except in an advisory or administrative capacity. All of the states, however, have made sufficient provisions to enable them to qualify under the requirements of the Federal Aid Road Act.

Appropriations, Expenditures, and Mileage.—The accompanying tables adapted from U. S. Department of Agriculture Circular No. 74, prepared by the Division of Road Economics, Office of Public Roads and Rural Engineering, give the state and local expenditures, mileage, etc., more fully than can be expressed in any other form. The value of the convict labor and statute labor, which is estimated at a grand total of $15,000,000 for the entire United States, is not included in these tables.

WATERWAYS AND HARBORS

C. H. Crennan

Appropriations and Expenditures.—The total appropriations for river and harbor improvement since the establishment of the Government, including permanent annual appropriations, amount to $936,287,376.28. During the fiscal year ending June 30, 1917, the Federal Government expended on this work $31,183,434.76, as compared with $34,846,496.10 in the preceding fiscal year.

The Rivers and Harbors Act of Aug. 8, 1917 (H. R. 4285, Public Doc. 37, 65th Cong., 1st sess.) contained appropriations for specific projects of improvement, as did the Rivers and Harbors Act of 1916 (*A. Y. B.*, 1916, p. 287). The Act of July 27, 1916, carried an appropriation of $40,598,135, which was increased by appropriations in other acts and by indefinite appropriations to a total of $44,805,301.65 for the fiscal year 1917. Appropriations for the fiscal year 1917 amounting to $46,022,270 were recommended to Congress, but the Act of Aug. 8, 1917, carried only $27,826,150. This, however, was increased by other acts to a total for the fiscal year of $37,744,123.81, as shown in the following table:

Sundry Civil Act of June 12, 1917	$7,005,000.00
Rivers and Harbors Act of Aug. 8, 1917	27,826,150.00
Permanent annual appropriations	297,600.00
Indefinite appropriations:	
Operating and care of canals, etc.	$2,435,173.82
Removing sunken vessels	68,439.99
Related works:	
Expenses of California Debris Commission	15,000.00
Prevention of deposits in New York Harbor	96,760.00
Total	$37,744,123.81

Difficulty in securing adequate data, due in no small measure to war conditions, precludes any thorough appraisal of harbor and waterway development during the year 1917. Certain projects, however, mark general progress.

Boston.—The improvement of the Weymouth Fore River at Boston, Mass. (*A. Y. B.*, 1916, p. 287), has been practically completed, only the ledge lying in the approach to the channel, south of the west end of Peddock's Island, remaining to be removed. Upon the removal of this ledge the dredging of the channel will complete the project. No appropriation, however, was made for this improvement in the Rivers and Harbors Act of Aug. 8, 1917, so that it is impossible to state when the project will be finished.

New York.—The pier at West Forty-sixth Street, North River, New York, the largest in Manhattan Island, is practically finished, only the installation of lighting, plumbing, heating and fixtures remaining to be completed. The contract for dredging in the slips of this pier has progressed rapidly, the Government doing the necessary dredging outshore of the pierhead line. This pier is a modern, two-story, steel structure, 1,000 ft. long and 150 ft. wide, with slips 360 ft. in width. The improvement will provide 3,700 linear ft. of wharfage and 285,000 sq. ft. of dock space.

The work of repairing and remodeling the piers at West Fifty-fifth, West Fifty-sixth and West Fifty-seventh Streets, North River, is almost completed. Plans have been drawn for widening Pier No. 29, North River, on the north side to provide for a motor-team driveway to facilitate the handling of freight and relieve congestion at this part of the waterfront. Several of the recreation piers of the city have been remodeled and are in use by the Government. Studies have been made also for the relocation of storage sheds on the marginal way along the lower North River to relieve congestion on the piers and facilitate traffic.

The improvement of Newark Bay and the Passaic River (*A. Y. B.*, 1915, p. 294) has been prosecuted vigorously. The maximum drafts that could be carried at the close of the fiscal year 1917 were: 20 ft. to a point about 2,000 ft. above the Plank Road bridge; thence about 18 ft. to a point about 800 ft. below Jackson Street; thence about 14 ft. to the Montclair and Greenwood Lake Railroad bridge; and thence 5½ ft. to Passaic. The proposed improvement at Bayonne (*A. Y. B.*, 1916, p. 288) has been abandoned (see X, *Public Services*).

On Nov. 3 it was announced that a New York Port War Board had been created by President Wilson to coordinate all harbor and terminal facilities "so that New York and New Jersey will contribute every ounce of energy toward the winning of the war." The personnel of this Board includes William G. McAdoo, Secretary of the Treasury, chairman; Wm. R. Willcox, chairman of the New York-New Jersey Port and Harbor Development Commission, vice-chairman; Secretary of War Baker; Secretary of the Navy Daniels; Secretary of Commerce Redfield; E. N. Hurley, member of the Railway War Council; the mayor of New York; members of the New York-New Jersey Commission; and Julius Henry Cohen, secretary. Governors Whitman and Edge, prior to the creation of the Board, had pledged the support of their respective states through the New York-New Jersey Commission in the use of the port for war service. A definite plan has been worked out for the management of the port during the war under this one central agency.

Philadelphia.—Progress on the three projects for the improvement of the Delaware River at Philadelphia stood, on June 30, as follows: the Lalor Street, Trenton, to upper railroad bridge project was about 70 per cent. completed; the 12-ft. channel from Philadelphia to Trenton had been completed, but maintenance dredging was again necessary to restore it to project depths; while the plan for the 35-ft. channel from Philadelphia to the sea was about 45 per cent. completed. The controlling depth at the close of the fiscal year was 30 ft. at mean low water. No other work of river and harbor improvement in the immediate vicinity of Philadelphia was in progress, except on the Chester River and other small tributaries of the Delaware River in New Jersey and Delaware. Improvement of the Schuylkill River has not commenced.

It was hoped that the McKean Street pier (*A. Y. B.*, 1916, p. 288), estimated to cost approximately $1,500,000, would be available for use by June 1, 1918, but work has been delayed by war conditions and it is impossible now to say when it will be completed. This pier is the first of what is termed the Moyamensing group, which will consist of ten large structures averaging 300 ft. in width and more than 1,000 ft. in length, to be located on the Delaware River from McKean Street south to Hoyt Street.

From the loan authorized in 1916, $10,000,000 will be available for the building of new piers and general harbor work, while $3,300,000 will be used for the purchase of terminal river-front property which is to be converted into great storage and classification freight yards, to be connected with the Belt Line which feeds the three trunk railroads.

Charleston.—The projected 28-ft. channel from Charleston Harbor to the sea was about 96 per cent. completed in October. Only a small amount of dredging, in addition to the dredging for maintenance, remained to be done. The project depth had been secured but not the full channel width.

New Orleans.—The Rivers and Harbors Act of Aug. 8, 1917, made an appropriation of $1,825,000 for continuing the improvement and maintaining the passes of the Mississippi River. This amount was in addition to the permanent-annual appropriation of $100,000 for the maintenance of South Pass. On June 30, the controlling depth through South Pass was 31 ft., and through Southwest Pass, 24 ft.

Seattle.—The dam and locks of the Puget Sound-Lake Washington Canal have been built, but the channel has not been enlarged to project dimensions throughout. At the end of October the greatest draft that could be brought from Puget Sound to the locks was 12 ft. at low tide or 23 ft. at mid tide. Above the locks of Lake Union a channel 100 ft. wide and 36 ft. deep at low water has been dredged, and from Lake Union to Lake Washington the channel stands 75 ft. wide and 26 ft. deep at low water.

Waterways Administration. — A change in government organization for the handling of waterway improvement was forecast by Section 18 of the Rivers and Harbors Act of 1917. A Federal Waterways Commission of seven members was created, to be appointed by the President, at least one member to be from the active or retired list of the Engineers Corps of the Army, at least one to be an expert hydraulic engineer from civil life, and the remaining five to be selected from either civil life or public service. The purpose of this Commission is

> to bring into coördination and coöperation the engineering, scientific and constructive services, bureaus, boards, and commissions of the several governmental departments of the United States and commissions created by Congress that relate to study, development, or control of waterways and resources and subjects related thereto, or to the development and regulation of interstate and foreign commerce, with a view to uniting such services in investigating, with respect to all watersheds in the United States, questions relating to the development, improvement, regulation and control of navigation as a part of interstate and foreign commerce, including therein the related questions of irrigation, drainage, forestry, arid and swamp land reclamation, clarification of streams, regulation of flow, control of floods, utilization of water power, prevention of soil erosion and waste, storage, and conservation of water for agricultural, industrial, municipal, and domestic uses, coöperation of railways and waterways, and promotion of terminal and transfer facilities, to secure the necessary data, and to formulate and report to Congress, as early as practicable, a comprehen-

sive plan or plans for the development of waterways and the water resources of the United States for the purposes of navigation and for every useful purpose, and recommendations for the modification or discontinuance of any project herein or heretofore adopted.

The personnel of this Commission had not been announced at the end of the year.

Another noteworthy event in relation to organization was the creation of a Committee on Inland Water Transportation by the Council of National Defense early in the year. This Committee included in its membership a full representation of waterway interests from and including the Missouri River to the Atlantic seaboard. Its personnel was: Gen. W. M. Black, Chief of Engineers, U. S. A.; George E. Bartol, Philadelphia, now deceased; Capt. J. F. Ellison, Cincinnati; Joy Morton, Chicago; J. E. Smith, St. Louis; Walter S. Dickey, Kansas City; and M. J. Sanders, New Orleans. A large amount of information has been accumulated by the Committee relative to the condition of inland water transportation, a report of which was presented to the Council of National Defense in December. The report indicated where our inland waters are insufficiently used and the causes underlying such lack of use, and also contained a recommendation of policy with regard to inland waterways. The studies of the Committee early disclosed many difficulties to be remedied before water transportation can be successfully maintained, relating to marine insurance, towage, suitable terminals, etc.

Traffic on Inland Waterways.—The attitude of the railroads towards competing water lines has been a matter of some speculation, but a statement from the executive committee of the Special Committee of the American Railway Association showed a clear disposition on the part of the railroads to welcome waterway coöperation. The railroads, moreover, in the latter part of November were asking for the aid of the United States at the various ports. The general operating committee of the eastern railroads asked especially that the moving of coal to New England points from the tidewater ports of Baltimore, Philadelphia and New York be handled by steamers and by seagoing tugs drawing boats of shallow draft. To secure additional relief for the railroads by more extensive use by shippers of other routes, this committee recommended also that water transportation on the great Lakes be utilized more fully. They urged that the season of navigation be extended as far into the winter as possible. With the heavy pressure for transportation facilities, a fuller coöperation between rail and water lines promised to be both rapid and inevitable. (See also XX, *Civil Engineering.*)

During the year certain experiments were made on the Mississippi River and some of its tributaries, demonstrating that these streams undoubtedly can be utilized for freight traffic with economic advantage to all concerned. The Committee on Inland Water Transportation organized for the movement of freight on the Mississippi River and its tributaries. A traffic manager for the Mississippi was engaged, and the coöperation of the important cities was solicited for the support of barge lines between New Orleans, St. Louis and the Twin Cities. Moreover, the national Government decided to build a fleet of steel barges and tow boats for use between the Twin Cities and St. Louis. The plan was for these boats to carry coal up stream from the Illinois coal fields and iron ore as return freight. Heretofore these materials have not been carried commercially upon the upper Mississippi, so that this movement marked a new departure in inland water transportation. The construction of this fleet is to be supervised by the Shipping Board, and it is to be operated by a corporation chartered and organized for that specific purpose. Similar fleets may possibly be created for use on other inland waters. The Committee on Inland Water Transportation early established an agency at Cincinnati for the purpose of promoting the commercial use of the Ohio and Tennessee Rivers and had an experienced traffic man in that field to go over the territory and aid in the preparation of plans for their utilization. (See also XIX, *Inland Waterways and Coastwise Commerce;* and XX, *Civil Engineering.*)

Waterways and the War.—While

our inland waterways have not been created for the specific purpose of supplementing the railroads in mobilizing national resources for the prosecution of war, there has been a certain agreement between exponents of inland-waterway improvement and government officials that inland waterways could and should be used more extensively for immediate war purposes. It was suggested by Adm. Wm. S. Benson in an address before the thirteenth annual convention of the National Rivers and Harbors Congress in Washington on Dec. 6, 1916, that the development of inland waterways might permit the use of canals by battleships or vessels of the largest tonnage as well as submarines, torpedo boat destroyers and the small craft attached to these larger vessels. The importance of waterways as lines of communication and supply both for offensive and defensive action was also emphasized. On Sept. 29 greater use of water transportation for coal and other military supplies was urged in the Senate by Senator Ransdell (La.), and about the same time a New York State official pointed out that railroad terminal congestion such as occurred during the winter of 1916-17 at the Port of New York could be relieved by more extended use of the new Erie Barge Canal. Soon after the appointment of the Committee on Inland Water Transportation, a member began investigating the possibility of stimulating the use of the New York State Barge Canal as a war measure. By November, however, no evidence was at hand to warrant a conclusion that our waterways were being developed particularly as part of a broadly conceived military policy. (See also XX, *Civil Engineering.*)

The Panama Canal.—Slides such as interfered with traffic through the Panama Canal in preceding years (*A. Y. B.*, 1916, p. 290) were not a matter of concern in 1917. The monthly issues of the *Panama Canal Record* contained this usual statement: "Culebra and Cucaracha slides showed no unusual movement during the month and sufficient channel was maintained at all times through the slide area."

The work of terminal construction progressed steadily, especially on Pier 6 of the Atlantic terminal. Construction work on Pier 7 was completed in March. The Pacific-terminal construction organization was abolished on July 31 as its work was practically completed.

The two new coaling plants of the Canal (*A. Y. B.*, 1916, p. 290) have an emergency storage capacity of 700,000 tons and a normal capacity of some 500,000 tons. Of this amount a supply of some 350,000 tons is to be kept at Cristobal, as it is expected that most of the coaling will regularly be done in the Atlantic terminus. The Atlantic plant was in operation in 1916 and the construction of the Balboa plant was essentially complete in March, 1917, as acceptance tests had then begun. With the question of an adequate coal supply so acute in the United States and price regulation by the Federal Government in operation, the following revised canal tariff has some interest (*Panama Canal Record*, Nov. 7, 1917):

For steamships, including warships of all nations, delivered from coaling plants or alongside of vessels in lighters or in cars on the wharves, and trimmed in bunkers, per ton of 2,240 pounds:

At Cristobal-Colon	$10.00
At Balboa	$11.50

The huge dry dock at Balboa (*A. Y. B.*, 1916, p. 290) was used regularly throughout the year. Repairs to the gates of the 300-ft. dry dock at Cristobal were completed in September, and so decreased the leakage that it was possible to pump out the dock in little more than half the time formerly required. Pumping out now requires 1½ hours, as compared with three hours under the conditions that prevailed for several years.

The effect of the war was apparent in the rules for the regulation, management and protection of the Panama Canal and the maintenance of its neutrality and in notices regarding the selective service law rather than in any noticeable curtailment of the work of canal improvement. (See also XIX, *Inland Waterways and Coastwise Commerce.*)

X. PUBLIC SERVICES

Richard C. Harrison

PUBLIC SERVICE COMMISSIONS

Status of Public-Utility Regulation.—Regulation of public-utility corporations by state commissions is now almost universal throughout the United States. During 1917 Utah, one of the few remaining states without such control, passed a drastic regulatory statute. The chief criticism made of the commission form of control continues to be of the tendency to select as commissioners men without previous training in public-utility work, and of the failure, for political reasons, to reappoint successful commissioners. Statistics compiled by railroad associations for use in arguments for Federal rather than state control show that, at the beginning of 1917, of 158 public-service regulators, only 10 had had railroad experience. One commissioner, Bristow of Kansas, had been a United States Senator, while two, Yates of Illinois and Pennypacker of Pennsylvania, were formerly governors of their respective states. Approximately half the commissioners were lawyers. The terms for which members of the commissions are chosen vary from two years in Arkansas and North Dakota to seven years in Maine and 10 years in Pennsylvania. There are 31 states in which the term is six years. In 1909 the *Railway Age Gazette* made a similar study of the personnel of the public-service commissions, reporting at that time 42 lawyer commissioners and 13 practical railroad men. The failure to reappoint experienced commissioners has greatly weakened many of the state boards, and at the same time has released experienced advocates whom the public-utility companies have not been slow to employ when they find it necessary to plead their cases before the commissions.

The companies have greatly modified their early attitude of hostility to government regulation. They have recognized the inevitable, and many of them feel that it is the greatest barrier against municipal ownership. The following statement from the 1917 report of the president of the American Telephone & Telegraph Co. is typical:

> While commission regulation has not yet progressed beyond the development stage, and this will probably be true of it for a number of years, it has gone far enough to warrant the statement that substantial progress has been made toward sound results. . . . It is worth while noting that the development of the work of the commissions manifests an increasing appreciation by them of their responsibilities, and a growing earnestness in their efforts to reach solutions of the questions presented to them.

The effect of the European War has extended even to the personnel of the public-utility commissions. New York has already lost two of the five members of the Commission of the First District, the local New York City body, Henry W. Hodge and William Hayward. Colonel Hodge is one of the country's leading experts in bridge engineering and has been a valuable member of the Commission, devoting much of his time to the problems of subway construction. Governor Whitman is quoted as being unwilling to accept the resignations and is in favor of legislation which will permit him to appoint "temporary commissioners" to hold office during the period of the war. It is expected that bills for this purpose will be considered by the legislature early in the session of 1918

Connecticut.—By Chapter 332 of the Laws of 1917 of Connecticut power is given to the state Public Utilities Commission to fix standards for gas and to determine the initial efficiency of electric lamps.

Idaho.—By Chapter 161 of the Laws of 1917 the public-utilities law of Idaho was amended to include automobile routes under the jurisdiction of the state Commission. This legislation is in line with that of a number of states in which the "jitney bus" has become important as a supplement to other transportation systems.

Montana.—Chapter 135 of the Laws of 1917 permits the Railroad Commission of Montana to order railroads to build and operate commercial spur tracks where public necessity therefor can be shown and where the connection is not over two miles in length.

Nebraska.—Companies organized for the purpose of "storing, transporting or conveying salt, alkali brine and other mineral products" and owning, operating or controlling any pipe-line plant or equipment for such purpose are now placed under the control of the state Railway Commission of Nebraska by Chapter 175 of the Laws of 1917.

Oregon.—The public-service law of Oregon was greatly strengthened by Chapter 164 of the Laws of 1917, requiring new companies to obtain certificates of public convenience and necessity before beginning business. This provision is found in the public-utilities laws of all of the more progressive states, and has proved of great value, not only in protecting the public against wasteful competition, but also in encouraging the companies to keep their service up to standard in order to keep out new competitors. The Oregon law also gives to the Commission the power to order extensions of service where necessary. The right of the Commission to fix rates even where a company has received a local franchise establishing the same was upheld in Woodburn v. Public Service Commission (161 Pac. Rep. 391), the court holding that the possibility of the state's exercising the rate-making power was an implied condition of a municipal franchise.

Texas.—Chapter 30 of the Laws of 1917 of Texas includes pipe lines among public utilities and places them under the supervision of the state Railroad Commission.

Utah.—Utah joined the list of public-service commission states by an act approved on March 8 (Laws of 1917, Ch. 47). It created a board of three members to be appointed by the governor subject to confirmation by the legislature. The terms of the first commissioners are to expire on the first Monday in February 1919, 1921 and 1923, respectively, and their successors are to be appointed for six-year terms. Commissioners must be at least 30 years of age and not more than two may belong to the same political party. Each is to devote his entire time to his official duties and is to receive a salary of $4,000 per annum. Fifty thousand dollars was appropriated for the work of the new board. The law is very comprehensive in scope. It applies to railroads and street railways, express companies, automobile transportation lines, light, heat and power companies, both gas and electric, warehouse concerns, water-works and telegraph and telephone companies. The jurisdiction of the commission is "to supervise and regulate every public utility in the state as defined in this Act and to supervise all the business of every such public utility, and to do all things whether herein specifically designated or in addition thereto which are necessary or convenient in the exercise of such power and jurisdiction." The commission is given full power to control rates, including the right to establish through routes and joint rates. It may regulate the business practices of the companies under its charge and prescribe systems of accounts. A very interesting and important provision permits the commission to allow one public utility to use, if necessary, the plant of another when this may be done without interference with the latter's business. The commission may value property, fix standards of service, and order extensions where needed. Unwise competition is prevented by the familiar provision requiring new companies to obtain certificates of convenience and necessity before beginning business. To guard against the possible nullification of the act as unconstitutional because of its drastic provisions, the following clause is inserted: "If any section, sub-section, sentence, clause or phrase of this Act is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this Act," the legislature declaring specifically that it would have passed the remainder even without the condemned portions.

The passage of the law brings to a successful conclusion a long campaign by advocates of state control of public utilities. Similar legislation was introduced in 1913 and again in 1915, but was defeated because of the fear of local authorities to submit to centralization of power in the state and because of the expense of a regulatory board. The victory is complete and Utah is now among the states with "strong" public-utility commissions.

Washington.—Late in 1916 the voters of Washington rejected by referendum vote a proposal to amend the public-utilities law of the state so as to compel new companies to obtain certificates of convenience and necessity before engaging in business. This action is directly in contrast with the adoption of similar legislation in Oregon and in a majority of the other states which have passed public-utility legislation (see "Oregon," *supra*).

New York City.—The most important event in connection with the work of the Public Service Commission for New York City during the year was the practical turning over to the Commission by the city authorities of the important negotiations with the New York Central Railroad Co. for the relocation and improvement of its New York City freight terminals. The modernization and improvement of the antiquated seaboard terminals of this railroad is a matter of national rather than local importance. It is the only trunk line railroad to the West which has direct rail connection with the city without the necessity of breaking the haul by lighterage across New York harbor. The New York Central, with its allied lines, has a trackage of approximately 50,000 miles. Negotiations for changes in the Company's tracks within the city limits, eliminating grade crossings, and improving its terminals and electrifying its line had been actively under way with the Board of Estimate and Apportionment since 1911. A proposed settlement was submitted in 1916 by the Port and Terminal Committee of the Board of Estimate and Apportionment. Public opinion was very much divided over the relative advantages and disadvantages of the proposed plan. The most important civic and commercial bodies in the city favored it, but it was opposed by certain interests which based their objections in large part upon alleged damage to city parks. It was also charged that the carrying out of the project along the lines suggested would interfere with the development of a comprehensive plan which would consider the needs of the other trunkline railroads as well as those of the New York Central. The matter was the subject of very bitter controversy and debate during 1917, and legislative investigation was threatened. The Legislature late in the session repealed the enabling act under which the Board of Estimate and Apportionment had been negotiating, and passed a new statute which became a law over the veto of Mayor Mitchel. This act (Laws of 1917, Ch. 719) provided for a joint conference committee, to consist of three members of the Board of Estimate and Apportionment and two members of the Public Service Commission, for the purpose of taking over the negotiations with the New York Central and if possible reaching an agreement before Dec. 1, 1917. In the event of no agreement's being reached, the matter was to rest entirely in the hands of the Public Service Commission, the statute giving the Commission authority to impose a plan upon the Company. The Mayor appointed to the conference committee the three members of the Board who had been most prominently identified with opposition to the original plan of the Port and Terminal Committee of the Board. The joint committee presented a tentative report in October, which proposed that the Railroad should be granted certain additional rights "subject to complete termination by the City after twenty-five years" (see also *Corporations and*

Franchises, infra). On Oct. 15 the Company declined to accept a settlement on the terms proposed and challenged the validity of the statute under which the committee was acting. The matter was made a political issue in the municipal campaign, and as one of the most prominent opponents of the railroad was elected to the office of comptroller, it seems practically certain that nothing can be accomplished in advance of a thorough testing of the rights of the railroad through prolonged litigation.

St. Louis.—The cities of Missouri formerly had their own local public-utility commissions, which were abolished in 1913 by the establishment of a state board (*A. Y. B.*, 1913, p. 299). There has always remained a certain amount of resentment in the larger cities against this "invasion of home rule," particularly as applied to central control of municipally owned plants. In 1917 the Board of Aldermen of St. Louis decided to subsidize manufacturing plants by selling them water from the municipal plant at about one-third of the rate charged consumers generally. Its action was approved by many of the business organizations of the city and by a majority of the press. The Public Service Commission, however, refused to approve the discriminatory rate schedules. A campaign was immediately begun to remove city-owned water works from the Commission's jurisdiction, St. Joseph and Kansas City joining in the fight before the legislature, and the necessary legislation was passed to amend the public-service commission in this respect (Laws of 1917, p. 433).

Washington, D. C.—The strike by the employees of the street railways of Washington, D. C., in 1916 (*A. Y. B.*, 1916, p. 429) resulted in Congressional investigation. Recommendation of government ownership of the street railways of the District of Columbia, or, in the alternative, direct government control through a strong public-utilities commission, is the most important feature of the report which was laid before the Senate just prior to the adjournment of Congress in October. Separate reports were made by Senators Pittman, Johnson and Jones, but they all agreed that one or the other scheme must be adopted in order to prevent a recurrence of the labor troubles. All three reports were condemnatory of the actions of the local companies. Senator Pittman recommends "the creation of an individual public-utilities commission with enlarged powers to regulate and control the public utilities of the District, and examine into and supervise the relations between such public-utility employers and employees and pass upon grievances and disputes which may arise between them." The report is typical of a growing feeling that disputes between capital and labor so far as they affect the operation of public utilities are matters of such general public concern that compulsory arbitration should be adopted.

CORPORATIONS AND FRANCHISES

Regulation of Franchise Granting.—The new Montana law authorizing the adoption of the city-manager plan by cities of the state (Laws of 1917, Ch. 152) contains some interesting and progressive provisions regulating the granting of franchises. All franchise contracts must be passed upon by a referendum at either a general or a special election. No exclusive grant may be made. All contracts must reserve to the city specifically the right to acquire the property of the grantee by purchase. This right is to be in addition to the city's power to condemn the plant. Rates for service must be fixed in the grant. Renewals of expiring grants more than two years from their termination are prohibited.

By Chapter 122 of the Laws of 1917 of Minnesota, cities of less than 10,000 population are authorized to grant franchises for central heating systems. Chapter 125 legalizes such plants as have already been built in advance of specific authority.

Dallas.—Several interesting franchise settlements have been made during the year in various cities of the country, most of them so framed as to clear the way for ultimate municipal ownership. In Dallas, Tex., a new electric-lighting franchise has been granted as the result of a favorable referendum vote. The company agrees to spend not less than $2,000,000 in adding to, altering and reconstructing its plant and distributing systems. Rates were to be reduced on Nov. 1 three cents per kilowatt-hour, but the company anticipated this provision and reduced them a month before the required time. The new schedule of rates for lighting current varies between eight cents and 3.6 cents per kilowatt-hour.

At the same time a new street-railway franchise was approved, which calls for the expenditure of $1,000,000 by the railway company on reconstruction and improvements. The price of street-car tickets was reduced to 22 for a dollar, and a sliding scale of fares based upon future earnings is provided for in the franchise.

In connection with these new franchise grants the city commission has created the office of supervisor of public utilities, with a salary of $6,000 and a staff of assistants. The new official is to keep in close contact with operation under the new franchises and is to make monthly reports to the city commission concerning the financial results. Morris N. Baker has been appointed to the office.

Des Moines.—The coal available for use in Des Moines, Iowa, produces very dense and objectionable smoke. This fact has been used as the basis for a campaign to reduce the number of coal-burning plants through the establishment of a central heating system. A franchise for this purpose was defeated in 1916 but on March 26, 1917, it finally received the approval of the necessary majority. The franchise is to run for 25 years. It is to be revalued and the compensation readjusted at the end of seven years.

Minneapolis.—Over two years ago negotiations were begun with the local street railways of Minneapolis for a renewal of their franchises. As a basis for the proposed settlement, the Council directed the city engineer to appraise the value of the property. He reported in September, 1916, a value of $25,914,308. The company submitted a valuation of $35,323,375. The Council on Feb. 15, 1917, employed Charles L. Pillsbury, a franchise expert who has done considerable work in connection with the valuation of the Washington street railways, to check the estimates. The company proposes to operate under a franchise based on cost of service with a fixed fare of five cents to certain points and a division of profits with the city. Before a new franchise can be granted it must be approved by a referendum vote.

New York City.—The most important franchise question of the year was involved in the negotiations between the City of New York and the New York Central Railroad Co., treated in full in a previous section (see *Public Service Commissions, supra*). The company contended that it needed no new franchises for the proposed freight-terminal changes, having all that it required from its original legislative grants and from the general laws of the state. Opponents of the project contended that any new trackage, particularly where it was in public streets, required an additional franchise grant, and that these grants should be made for a limited term subject to revaluation and recapture.

Important negotiations were carried on during the year for a considerable extension of motorbus franchises in New York. It was proposed to extend the service in the Borough of Manhattan to a number of sections not adequately served by rapid-transit or street-railroad lines. Vigorous opposition developed, led by persons who feared that any material increase in heavy motor traffic would render the streets unsafe for ordinary vehicular and pedestrian traffic, and also on the part of certain traction lines which contended that their revenues would be adversely affected. No final decision was reached, but temporary permits were granted to extend routes to the upper part of Manhattan as an experimental test.

Toledo.—An exceedingly interesting franchise has been proposed by the city authorities of Toledo, Ohio, after more than a year's negotiation with the Toledo Railways & Light Co. It provides for the ultimate municipalization of the city's street railways through the medium of a new company which is to be organized on a "community" basis. It is proposed to organize a corporation, the stock of which can be purchased on the instalment plan and which is to receive dividends at the rate of six per cent. per annum. The plan is to have practically all of this stock taken by local financial interests. The new company is to receive a 25-year franchise. If during the first ten years of this term the city has not taken over the property or decided to extend the franchise period, an amortization fund is to be established for the purchase and retirement of stock at the end of the franchise term. Not to exceed one-half of one per cent. of the capitalization is to be set aside monthly in this amortization fund and placed in the hands of trustees who are to hold it for the 15-year period remaining of the franchise term. Not to exceed 75 per cent. of the par value of the capital stock is to be placed in this fund. If the city acquires the property, holders of capital stock are to receive a bonus of six per cent. over and above its par value. After five years the city may purchase the property from the company by paying 25 per cent. of its appraised value in cash and the balance over a term to be agreed upon. The rate of fare is to be based upon the cost of operation, including interest and dividends as provided for in the franchise contract. Before going into effect the proposed franchise has to be submitted to a referendum vote. The plan is novel and interesting, and if it is accepted its practical workings will be carefully watched throughout the country.

MUNICIPAL OWNERSHIP

Progress of Municipal Ownership.—There have been important developments in the field of municipal ownership during the year, owing partly to the extraordinary conditions produced in American cities by the European War. High prices and scarcity of supplies of many necessaries have forced a number of communities to enter fields which had previously been left very largely to private initiative. The two largest municipal freight-terminal projects, those of Bayonne, N. J., and South Brooklyn, New York City (*A. Y. B.*, 1915, p. 302), have not been carried out (see *infra*). The former has been definitely abandoned; plans for the latter have not been carried to completion, and with the change in the city administration in accordance with the recent elections, it is probable that they will not be carried out, at least for a number of years to come. These projects were both of considerable general interest as initiating a new policy of municipal coöperation with transportation lines in establishing municipal terminals.

By Chapter 73 of the Laws of 1917 North Dakota cities are authorized to sell the surplus product of municipal electric lighting plants and water works to consumers outside the city limits.

In Washington legislation was passed during the year both in favor of and against municipal ownership. Cities and towns were authorized, if approved by referendum vote, to sell or lease their water works, gas plants, electric light and power plants, street railway, telegraph and telephone lines. Cities of the third class were authorized to acquire water works and light, heat and power plants, "provided that when such works or systems are owned by any city after being placed in operation no taxes shall be imposed for maintenance or operation but such charges shall be paid from the earnings of such works or systems."

An interesting extension of the municipal ownership movement is indicated in a Wyoming act (Laws of 1917, Ch. 90), which authorizes cities and towns to purchase land not over 80 acres in extent for cemetery purposes. Full power is granted to improve the land and to sell plots to private owners in exactly the same manner as private cemetery companies. Any proposition to establish such a municipal cemetery must in each case be passed upon by referendum vote.

Akron.—The city of Akron, Ohio, owns a municipal water works which represents an investment of approximately $5,000,000. On June 5 it was voted to spend an additional $1,000,000 to increase the capacity of the pumping station and to construct larger and better filter beds, together with certain necessary service extensions.

Bayonne.—At a special election held in Bayonne, N. J., in August, the people rejected by a vote of 2,704 to 2,143 a proposal to purchase the mains of the New York & New Jersey Water Co. at an estimated cost of approximately $1,500,000. Opposition to the plan was based upon the fact that the Company owns the mains but no source of supply, and that therefore the city might be placed in a position where it could not profitably use the system after it was acquired.

At the same special election it was decided by a vote of 3,408 to 1,075 to reject a proposal to issue city bonds to the amount of $10,000,000 for the purpose of financing a great municipal freight terminal. A proposition was submitted by Irving T. Bush, the president of the Bush Terminal Co. of Brooklyn, looking toward the construction, through the lending of city credit, of a great marine and warehouse terminal on the Newark Bay front, very much on the lines of the celebrated Bush Terminal in Brooklyn. It was stated by advocates of the plan that such a terminal would attract much of the business of the New York side of the Port of New York because of its ability to furnish direct rail connection without the necessity of lightering freight across New York Bay. The plan proposed by Mr. Bush would have guaranteed the city's investment and its adoption was strongly urged upon the municipality by the state authorities and many business interests. It was strongly opposed, however, by the mayor of the city, largely because of the claim that it would attract to Bayonne an undesirable class of cheap labor.

Cincinnati.—The city of Cincinnati has been trying for a number of years to persuade the various steam railroads to unite in building an adequate union passenger station. The municipality is in a unique position because of its ownership of an important steam railroad running to Chattanooga, Tenn. This line, which was built a number of years ago to stimulate business with the South, is leased to the Cincinnati, New Orleans & Texas Railway on a basis which makes it self-sustaining and which provides a sinking fund to retire the bonds. Failing in its attempt to induce private capital to build a new terminal, the city authorities decided to utilize the legislative powers possessed by the trustees of its own railroad and provide a new station as part of the equipment of the municipal railroad. The necessary legislative approval was secured to permit the investment of $20,000,000. Before actually spending the money, however, the trustees are required to contract with the railroads as tenants upon a basis which will yield operating expenses, interest, taxes, and a sinking fund for the amortization of the bonds within a 50-year period. The project can be finally approved only after receiving a favorable decision by a referendum vote.

Cleveland.—The Cleveland municipal electric plant (*A. Y. B.*, 1914, p. 297) has proved a success, producing a fair profit to the city at very low rates. Late in 1916 the question of enlarging the plant was submitted to the voters on a referendum. A bond issue of $1,750,000 for the purpose was approved.

Denver.—In 1911 the city of Denver approved an issue of $8,000,000 in bonds for the construction of a municipal water plant. The validity of the issue was attacked by interests connected with the local water company. Recently the U. S. Supreme Court has sustained the decision of the Circuit Court of Appeals in favor of the city, clearing the way for beginning work upon the building of a city-owned plant. It is probable that this course will be taken rather than the purchase of the private plant of the Denver Union Water Co.

Lansing.—Late in 1916 Lansing, Mich., started a municipal piggery, very largely for the purpose of disposing of the city's garbage. A report for the first nine months of operation shows a city investment of over $4,000 in stock and contains the statement that the saving in refuse-disposal cost has more than justified the experiment.

Los Angeles.—The great city aqueduct of Los Angeles (*A. Y. B.*, 1913, p. 580) is practically completed. As an important by-product the city will secure water-power which will permit the generation of sufficient electric current for municipal needs and a large surplus. To clear the way legally for the disposal of this surplus to other cities, a charter amendment was adopted by referendum vote authorizing the public-service commission to contract with outside communities for the exchange with them or sale to them of electric power for periods not exceeding 50 years. The privilege of cancellation upon three years' notice is to be reserved in all contracts. The immediate object of the amendment is to permit the making of a contract with the city of Pasadena.

New York City.—Attention was called in the YEAR BOOK for 1915 (p. 302) to the freight terminal railroad proposed by the City of New York as a municipal project to develop over five miles of Brooklyn waterfront. It was proposed that this road, which was estimated to cost about $14,000,000, should be constructed and owned by the city and equipped and operated under lease by a terminal company in which all of the trunk-line railroads reaching the Port of New York should have an equal stock interest. The terms of the lease as outlined by the city provided for a rental basis which would have made the road self-sustaining within a comparatively few years and enabled the city to release the amount of the expenditure from its limit of bonded indebtedness so that the funds could be used in the development of other portions of the port. As the first step toward carrying out the project, the city condemned approximately 13½ city blocks designated as the site for a central storage and classification yard. Although the award for this property has not been settled, it is estimated that it will be about $2,000,000. Negotiations have been carried on with the railroads' committee for over four years and apparently with excellent prospect of success. The unsettled conditions brought about by the European War, together with the various pleas by the railroads before the Interstate Commerce Commission, have delayed a final settlement. In September, however, Samuel Rea, president of the Pennsylvania Railroad and chairman of the conference committee of the trunk-line railroads in their consideration of the project, wrote to the mayor what seems to be a definite refusal to enter into the proposed lease. He stated that the line could not be developed without assuming a very large initial loss, which he estimated as at least $700,000 per year, and that the railroads could not contemplate this added expenditure at the present time. Mayor Mitchel in commenting upon the position of the companies said:

> If we cannot get a fair arrangement with the trunk lines then we must take the following course: we must look the situation over to see whether there is any other arrangement for operation which can be made on a fair and satisfactory basis, and if there is not then I believe the City of New York ought to build the enterprise with its own money and if necessary operate it as a public utility.

The city has reserved from its margin of possible legal indebtedness sufficient bonds to build the line. The project was one of the issues of the municipal campaign of 1917, the Democratic candidate attacking the motives of the administration in acquiring the classification yard, claiming that it was taken prematurely and partly because portions were owned by friends of the administration. In view of the election of Judge Hylan as mayor the future of the project is extremely doubtful. The Democratic platform contains strong municipal-ownership planks favoring the ownership and operation of practically all public utilities, but it is generally recognized that the ambitious programme suggested is far beyond the ability of the city to carry out in the present state of its finances. It is fair to assume, however, that if the Brooklyn marginal-railroad project is carried to completion during the next administration it will be operated as well as owned directly by the municipality.

The city has for the past ten years owned and operated a municipal ferry, one division of which is the only connection between the Boroughs of Manhattan and Richmond. It carries a traffic of about 15,000,000 passengers a year in addition to a large vehicle business. Its service has been of a high character and the schedule operated such that a showing of profits from operation has been impossible. The city's experience with the operation of this public utility has illustrated the tendency in such cases to furnish service without reference to cost, throwing the burden of deficit upon the general tax rate. During 1917 there has been a strong movement on the part of the Borough of Richmond to secure radical reductions in rates. Mandatory legislation was sought, framed in such form that the mayor of the city was not able to exercise the temporary veto power which he possesses in matters of such legislation. The bills successfully passed both houses of the state legislature but were vetoed by the governor upon the urgent request of the city authorities. Petitions to secure the same ends were thereupon promptly presented to the city's Sinking Fund Commission. A report of the dock commissioner shows that despite an apparent small operating surplus, the actual annual loss on the municipal ferry is about $500,000 if interest on investment is to be considered as in the case of private operation.

Omaha.—By Chapter 87 of the Laws of 1917 of Colorado the city of Omaha is authorized to submit to referendum vote the question of municipal acquisition, through condemnation, of water works, gas plants, electric light and power systems and street railways. Upon petition of 15 per cent. of the voters at the last general election the question must be submitted.

St. Louis.—In December, 1915, through the expiration of certain franchises, the city of St. Louis came into possession of a considerable stretch of Mississippi River frontage, together with a double-track railway. During 1917 definite steps were taken to construct a system of modern docks and a new railroad terminal in connection with them. Advocates of the plan urge that the improvement will release the city from the dominating grip of the railroads.

For over four years there has been considerable support of a proposition to construct a municipal electric-lighting plant. The franchise of the private company expires in 1920 and strong opposition has developed to its renewal. The city now owns a small municipal plant which supplies current for lighting public buildings. During the last municipal campaign all political parties pledged themselves to the extension of the service to private consumers. During the year the Board of Aldermen appropriated $12,500 for a survey and report upon the practicability of a municipal lighting service.

San Francisco.—It is becoming increasingly apparent that the municipal street-railway system of San Francisco must eventually absorb the privately owned lines of the United Railroad Co. The dispute over the right of the city to parallel the private tracks on Market Street (*A. Y. B.*, 1916, p. 294) has created a strong public sentiment in favor of early action. The state Railroad Commission has already begun a complete valuation of the Company's properties and franchises which may serve as a basis for negotiation for city purchase. The Company's officials are quoted as not being adverse to the plan. This is borne out by the recent action of the Company in reducing its capitalization, thus making city purchase a simple matter.

In connection with the beginning of work upon the new Hetch-Hetchy water system (*A. Y. B.*, 1913, p. 304) the city has completed the construction of 68 miles of municipally-owned railway running from the city to the site of the Hetch-Hetchy dam. It is expected that not less than 230,000 tons of construction material will be hauled over this new line. In addition to this service the city will engage in general business as a common carrier, furnishing facilities to a section which has not been served by a railroad. It will open up a large area of valuable timber land, the revenues from which are expected to pay a large part of the cost to the city in the building of the new road.

Tacoma.—The city of Tacoma, Wash., has in contemplation the municipalization of all of the local street railways. It owns an extensive municipal line along the tidal flats. During the year a contract has been made with the Tacoma Railway & Power Co. for operation of the municipal line by the private company for a two-year period. The Company is to operate at actual cost and is to furnish the necessary car barns, shops and storage yards. Equipment will be supplied by the city and responsibility for repairs is to be assumed by it. The city is to receive two cents and the Company three cents upon transfers between the two systems. The contract is voidable by the city providing that within the two-year period it acquires all or a majority of the Company's privately owned lines. The state Public Service Commission is named as a board of arbitration between the city and the Company in the event of disputes arising under the contract.

Toledo.—A proposed amendment to the charter of Toledo, Ohio, clearing the way for a general scheme of municipal ownership was recently defeated by a referendum vote. The opposition was led by the Toledo Clearing-House Association, a combination of local banks, which contended that the proposed amendment was broad enough to permit the city Council to apply the city's credit without limit for the purchase and construction of public-utility plants. The contention was made that this was far too much power to grant to the governing body without provision for a referendum vote.

Municipal Coal Mines and Yards.—The extraordinary shortage in coal brought about by lack of labor and congestion of transportation lines due to war conditions has caused an interesting extension of the municipal-ownership policy during 1917. The city of Denver has leased three small coal mines, agreeing to purchase the entire output and selling the coal to consumers at cost. Omaha, Neb., received legislative authority by Chapter 87 of the Laws of 1917 to establish a municipal coal yard, from which sales are to be restricted to inhabitants of the city. The price to be charged for coal was fixed at cost plus handling charges. Extensive municipal coal yards have also been established in Portland, Ore., and in Bluefields, W. Va. The city of Evansville, Ind., has taken steps to purchase a coal mine to be owned and operated by the city. As legislative authority was lacking, the mayor has offered to finance the plan personally until the necessary act can be passed. It is estimated that the initial cost of this experiment will be approximately $50,000. These experiments are interesting and more truly socialistic in character than the majority of municipal-ownership projects.

Public Markets.—The shortage of food and the high prices brought about by the European War have given a great impetus to the movement for the establishment of public markets throughout the country. Very interesting legislation was passed in New York State, forming Chapters 802 and 813 of the Laws of 1917. Chapter 813 provided, "during the time that the United States is at war with the German Empire and thereafter until the Governor by a proclamation shall declare the emergency no longer exists in whole or in part," for the establishment of a commission of three members to be known as the State Food Commission. This board, of which John Mitchell, a labor leader, has been appointed chairman, has broad powers of regulation and control. An interesting provision of the Act authorizes any municipality in the state, "in case of an actual or expected emergency or on account of the deprivation of necessaries by reason of excessive charges or otherwise, to purchase food and fuel with municipal funds or on municipal credit and provide storage for and sell the same to its inhabitants in such manner and through such agencies as it may determine," provided that it secure in advance the authority of the Food Commission. The Act provides for state aid to municipalities in the building and improvement of public markets. An appropriation of $1,000,000 was made for the work of the new board.

Chapter 802 contains provisions for the establishment of departments of markets in the various cities of the state by action of the local authorities. Acting under this statute New York City has established a Department of Markets and Henry Moskowitz has been appointed the first commissioner. One of his acts was to apply to the State Food Commission for authority to purchase and sell potatoes to relieve the local market.

Connecticut, by Chapter 266 of the Laws of 1917, has authorized the cities, boroughs and towns of the state to establish public markets, erect buildings and operate them as public utilities.

The National Municipal League, through a special committee of which Prof. Clyde L. King of the University of Pennsylvania is chairman, has published under date of March 15, 1917, a very interesting and complete report upon public markets in the United States. Statistics are given from 67 cities, showing the character of markets in operation and the financial results, together with an estimate of the business done.

LIGHTING

Chicago.—After more than a year's investigation and negotiation the Committee on Gas, Oil and Electric Light of the Chicago City Council effected a gas-rate agreement with the Peoples Gas Light & Coke Co. providing a rate of 30 cents for the first 350 cu. ft. and 70 cents a thousand cubic feet thereafter. The rate previous to the agreement was 80 cents per thousand cubic feet. The new rates are to remain in effect for a year, during which time negotiations are to be continued for a final adjustment of the matter.

Cincinnati.—After a long and exhaustive investigation into the proposal of the local gas company that it be permitted to increase its rate from 30 to 35 cents per thousand cubic feet, the Cincinnati City Council proposed favorable action and submitted the matter to a referendum vote. The proposition was defeated at a special election by a vote of 21,897 to 12,353. The defeat of the project means that the matter will be submitted to the Ohio Public Utilities Commission who will fix the rate after a new investigation.

Ft. Worth.—From Nov. 1 the local electric rate of Fort Worth, Tex., was reduced from ten cents to eight cents per kilowatt-hour, resulting in an estimated annual saving to consumers of not less than $50,000.

Joplin.—At a special election held in June the voters of Joplin, Mo., defeated a proposition to authorize an issue of bonds in the amount of $225,000 to build a municipal electric light plant, and at the same time refused to authorize a contract for the purchase of power from the Empire District Electric Co.

New York City.—The electric-light companies operating in the Borough of Manhattan, New York City, made a reduction in rate to seven cents per kilowatt-hour, effective July 1. This reduction, although voluntary, was the result of negotiations which have been carried on for a considerable period by the Public Service Commission.

Passaic.—The Public Service Gas Co. of New Jersey decided early in the year to abandon its fight to overrule the decision of the state Public Service Commission reducing the rate for gas in Passaic and Paterson from $1.00 per thousand cubic feet to 90 cents. Upon stipulation of all parties to the suit, it was stricken from the court calendar. The fight had been going on since 1911.

Topeka.—The 28-cent gas rate established by the Kansas Public Utilities Commission for Topeka and other cities (*A. Y. B.*, 1916, p. 297) has been held to be confiscatory and in violation of the Federal Constitution. The decision of the U. S. district court further holds that the Kansas Natural Gas Co. is engaged in interstate commerce and is not subject to the jurisdiction of the state Public Service Commission.

WATER SUPPLY

New York City.—New York City is now using its wonderful Catskill water system. Service on a small scale began in May, 1917, and in October full service was inaugurated with a great civil festival lasting for three days. Two hundred and fifty million gallons per day has been added to the former supply. Development of the second Catskill watershed, that of Schoharie Creek, just being inaugurated, will in a few years round out the system and make the total quantity of new water from the mountains not less than 500,000,000 gals. per day. The city is using at present 615,000,000 gals. daily, and has for the past five years added over 150,000 persons yearly to its population, each requiring 100 gals. of water daily. New York's Catskill system is the greatest waterworks, ancient or modern, and ranks among the most notable engineering enterprises ever carried out by any city, state or nation. For magnitude and cost and for variety, complexity and difficulty of physical problems encountered, it stands with the great canals, transcontinental railroads and New York's own wonderful subways. The portion of the great project completed, forming about three-quarters of the whole, embraces the Ashokan reservoir, an artificial lake 12 miles long for storing the water of Esopus Creek, and the Catskill aqueduct, extending 92 miles from the reservoir to the city's northern boundary, and 35 miles within the city limits. The system is operated entirely by gravity without pumping plants. The watershed area is about 570 sq. miles in extent. To ensure the quality of the supply an extensive aeration plant has been provided, a coagulating plant, and a filter of the rapid sand type. Chlorination is also employed to ensure sterilization. Work was begun in 1907. It has been under the direction of a special board of three commissioners appointed by the mayor. The cost to October, 1917, was $139,000,000. The estimated total cost of the project is $177,000,000.

Newport News.—The enormous additional burden thrown upon the public utilities of the port of Newport News due to the activities of the United States Government in connection with war shipments has necessitated among other things the immediate planning of additional filtration facilities by the local water company. Work has been begun upon an 8,000,000-gal. concrete gravity filter at an estimated cost of $400,000.

Paterson.—During the early part of the year it seemed that the city of Newark was the only one of the north New Jersey cities which was not in a position to enter into negotiations for the development of the Wanaque watershed. Litigation and disputes were finally settled, however, and the city of Paterson has decided to join with Newark in the making of a preliminary contract, the estimated cost of which is $8,560,000. This expenditure is to be borne equally by the two cities and will result in each receiving an initial supply of 10,000,000 gals. of water per day. Glen Ridge has announced that it will join these two cities as soon as it can complete the necessary arrangements. It is expected that the city of Paterson will acquire all or part of the distributing system of the East Jersey Water Co. either through purchase or condemnation for use in connection with the Wanaque supply.

Richmond, Cal.—The city of Richmond, Cal., has completed plans for a new water supply system estimated to cost $2,600,000. It is proposed to secure a water shed in Marin County which will produce not less than 10,000,000 gals. supply per day.

San Francisco.—San Francisco has made a definite beginning upon the Hetch-Hetchy project and has completed an important municipally owned railroad to aid in the construction work (see also *Municipal Ownership, supra*).

Savannah.—The municipal water works of Savannah, Ga., have fallen into serious disrepair and it was proposed to issue bonds to the amount of $500,000 to rehabilitate the system. This proposition, however, was defeated on referendum vote at a special election.

SEWAGE AND REFUSE DISPOSAL

Indianapolis.—A sewage-disposal commission has been created in Indianapolis. The members of the new commission are to receive annual salaries of $3,600 and are to be charged with the supervision of the building of the proposed sewage-disposal plant. The law provides that the city may issue bonds to the amount of $2,500,000 to construct the plant. Work on the plans is well under way.

Johnstown.—At the November election a proposition was submitted to the voters of Johnstown, Pa., for an issue of $530,000 of bonds for the enlargement of the city's sanitary sewers and the construction of a disposal plant. The city some time ago began the construction of a sewage system but as yet has never carried it to completion.

Los Angeles.—By a large majority the voters of Los Angeles at a special election rejected a proposition to issue bonds for the construction of a sewage-treatment plant, despite the fact that the city has been ordered by the State Health Board to build such a plant. The plans called for a bond issue of $1,750,000 for a plant to be located at Hyperion, designed to treat 97 per cent. of the city's sewage. A small supplementary plant was also contemplated to serve the San Pedro district. If the plant is to be built, the city will now be forced to levy taxes to cover its cost.

New York City.—What is probably the largest garbage-reduction plant in the world was completed for New York City during the year on Staten Island at a cost exceeding $2,500,000. It was built by a private company having a contract with the city for the disposal of refuse. It has a capacity of over 2,000 tons per day. Its location on Staten Island was bitterly opposed by people residing in the Borough of Richmond and resulted in local rioting on a substantial scale. Attempts to enjoin construction by legal action were unsuccessful and the plant was completed and is now in operation. A recent report by the local grand jury is to the effect that its operation is entirely unobjectionable.

Paterson.—By a final decree of the New Jersey State courts the city of Paterson is enjoined from polluting the Passaic River by the discharge of sewage after March 26, 1919.

Rochester, N. Y.—On Jan. 1 the city of Rochester, N. Y., acquired, at a cost of $135,000, the private garbage-reduction plant of the Genesee Reduction Co. It is now operated directly by the city department of public works.

Springfield, O.—The city of Springfield, Ohio, has decided to abandon the incineration of garbage and is to acquire a dumping ground sufficiently large to care for the estimated requirements of the next 20 years.

St. Louis.—The St. Louis Board of Public Service has approved a plan for converting the River des Pères into a sewer. This plan is a combination of surveys and estimates extending over a period of 15 years. The cost will approximate $6,700,000. The river will be closed in and a portion of the sewer roof will be used for driveways and boulevards. (See also XX, *Civil Engineering.*)

Disposal of Garbage Through City Farms.—Two cities, Lansing, Mich., and Wilkesbarre, Pa., have established municipal pig farms as a means of disposing of city garbage (see also *Municipal Ownership, supra*). The Wilkesbarre plant is privately owned but leased to the city for a 10-year period.

XI. MILITARY AND NAVAL

THE ARMY

ROBERT B. MCBRIDE

New Legislation.—On the Act of June 3, 1916, which upon approval became the basic military law of the United States, all laws passed during 1917 have been founded. That Act is quite fully explained in the YEAR BOOK for 1916 (p. 301), and it is only necessary to mention the fact that it became apparent during the latter part of that year that not only the broad powers conferred by that law would have to be exercised shortly to the fullest extent, but that other and still more unlimited powers would have to be conferred upon the Executive, in order to meet the crisis which was plainly foreseen by all thoughtful and patriotic citizens.

The most important of the new laws relating to the military service was the Act approved May 18, 1917, which authorized the draft, or what has become known as selective conscription. (See also IV, *National Administration.*) This Act, to be brief, authorized the President to call to the colors millions of men liable for service. The Act by its terms, provided for the necessary machinery to put its provisions into effect, classified the different forces, and was most complete in details, while generally following the lines laid down in the law of 1916. Other important legislation included the appropriation bills, acts providing for revenue, the act providing for War Risk Insurance (see also XIII, *Life Insurance,* and XIX, *War Risk Insurance*), and that providing for the reorganization of the Signal Corps, which, in its Aviation Section especially, has assumed a most important place in the military forces of the country. The Act, approved on June 15, 1917, defined and provided punishment for certain hostile acts against shipping, manufacturing plants, etc. The President issued several proclamations on this subject, and on the subjects of treason, misprision of treason, etc. Space is too limited to explain fully the important legislation enacted on army matters, but it is sufficient to say that laws have been passed providing the funds and the machinery for bringing the War to a successful end, including the authorization and appointment of various boards and committees for the conservation of food, the purchase of supplies, the provision of shipping, and other civilian functions bearing directly on the efficiency of the fighting forces.

Organization.—The two houses of Congress declared the existence of a state of war on April 3, 1917; shortly afterward the President directed that the Regular Army be brought to the full strength authorized by law. On April 30 all Reserve Corps officers of the Infantry, Cavalry, Coast Artillery and Field Artillery were ordered into active service. During May and June, many units of technical troops were authorized and organized. Three war prison barracks were established by orders in May, and the necessary organization and guard provided for them. In August the entire National Guard of all the states was called to the colors, and shortly afterwards the first increments of the draft were on their way, or being mobilized at the various camps and cantonments. The draft was made by proclamation of the President, local boards in the various voting precincts attending to the actual work. Many thousands of these boards put the work through at top speed, and the results were generally satisfactory.

Early in the year the announcement was made of the division of the Army into the three branches of the Regular Army, composed of officers and men of the permanent establishment, the National Guard, composed of the divisions organized from the old organized militia of the states, and the National Army, composed of the drafted men, and officered by Regulars in the higher ranks and Reservists in the lower. By August and September nearly all of the divisions of the National Guard and National Army were organized, and most of them were beginning their training in camp or cantonment. These troops, with the Regulars who will handle most of the artillery pertaining to the first army, and who also compose nearly all of the technical and staff corps troops, will form the first army of the American Expeditionary Forces.

Due to the experiences of our Allies many changes were found necessary in our organizations; the basic administrative unit, the company, was greatly strengthened in numbers, as was the regiment; many new services had to be provided for the changing and multitudinous demands of modern warfare, including such as gas and flame service, forestry regiments, stevedore and labor battalions, trench mortar and anti-aircraft organizations, railroad construction and road building units, and others which for obvious military reasons can not be mentioned in this article.

As the internal organization of the War Department itself had been tried for many years, it was believed that expansion in the various departments and bureaus would furnish successful methods by which to prosecute the War. It was necessary to create a new division in the Chief of Staff's office, designated the "Embarkation Service", which controls all matters relating to the transportation of troops and supplies to Europe. In the great work suddenly made necessary, some changes in the Departments were instituted, and several committees with a preponderance of civilian membership were appointed. These committees have given some valuable service, but have not been found a complete success.

Very few changes have occurred in the personnel of the War Department itself. Major-General Scott, who was Chief of Staff, was succeeded by Major-Gen. Tasker H. Bliss last year. Major-Gen. John Biddle has been Acting Chief of Staff during General Bliss' absence abroad. Major-Gen. John J. Pershing was made commander of the Expeditionary forces, and during the fall both he and General Bliss were promoted to be full generals. The Assistant Secretary of War, Mr. Ingraham, resigned in November and was succeeded by Major Benedict Crowell, an officer of the Engineer Reserve Corps. All of the brigadier-generals of the line have been made major-generals, and the heads of all staff corps and departments who were not already of that rank have likewise been promoted to major-generals. Several hundred colonels and lieutenant-colonels were promoted to fill vacancies thus made, and to furnish brigadier-generals to command the large numbers of new brigades.

The great demand for officers has been fulfilled in many ways, the law having given broad powers to the President in appointing them. It is just to say that a most splendid body of representative young Americans has responded to the call, and that the "Plattsburg idea" has given the service by far the best officers it has secured, with the exception of those from West Point and the Regular Army. These young men (the Reservists) came into the training camps with little knowledge of military matters, but with a high spirit, and with no erroneous idea of their own imagined knowledge to unlearn; as a consequence they rapidly gained the spirit of the service, and its sense of responsibility.

The General Staff.—Except for a few of the older General Staff officers, there has been a great change in the personnel of the Corps. It was found necessary for many to go on duty with the staffs of Division Commanders, and many others had to be utilized for other work. For the first time since its formation, the General Staff Corps has been confronted with its actual war time work. While some mistakes have been made, its work, on the whole, has been valuable to the country.

The Corps of Engineers.—In no war previous to this one, has the work demanded of engineer troops been of so varied and complex a character. The organization of the Corps has been changed and amplified to meet the emergency, and training in all its technique is now well under way. Many new units have been organized, and some have already, in France, given hard service and lost some men. (See also XX, *Engineering.*)

The Quartermaster Corps.—Like all other departments, this corps had a tremendous amount of work suddenly thrust upon it. The principal difficulties encountered have been in securing supplies, not enough being on hand at the beginning of the year to supply the troops fully. Much of the reserve supply had been used by the National Guard mobilized on the Mexican border last year, and much had been destroyed, lost, and damaged in this service. However, camps and cantonments were built on a scale never before attempted, and the work of getting full supplies has been pushed fairly rapidly, considering all the circumstances. This Corps has expanded to many times its former strength, and has organized many new classes of troops, its activities covering a wide field. Due to reports of conditions in the camps, Congress is now investigating the operations of the Department.

About the middle of December, the Quartermaster General, Major-Gen. Henry G. Sharpe, was relieved, and made a member of the National Defense Council. He was succeeded by Major-General Goethals, who was designated Acting Quartermaster General.

The Ordnance Department.—The same question of shortage of supplies in the Ordnance as well as in the Quartermaster Corps is causing a Congressional investigation of the former. A very large quantity of arms and munitions has been supplied, and it is stated that plants are turning out everything needful rapidly, but complete ordnance material has not yet been issued to all troops. General Crozier, who has been Chief of Ordnance for many years, has been placed on the National Defense Council, and General Wheeler, one of his assistants, made Acting Chief of Ordnance.

The Judge Advocate General's Department.—In addition to its other duties, the execution of the Draft Law was assigned to this Department. Its Chief, Major-Gen. Enoch H. Crowder, was made Provost Marshal General in May, and as such has had control of the entire conscription.

The Adjutant General's Department.—Few changes have occurred in this office, except a great increase in the numbers of officers and men on duty therein, and a greater increase in the work required.

The Inspector General's Department.—General Garlington, who was Inspector General last year, has been succeeded by General Chamberlin, long an officer of the Department. The usual work, increased many times, and complicated by new conditions, has necessitated an increase in the force of this office.

The Medical Corps.—This Corps has had a larger increase in its commissioned personnel than any other staff corps. It has a very large number of Reserve officers on active duty, among them being many of the leading physicians and surgeons of the country, including numbers of the foremost specialists. Several of its officers have already been lost in action, and it has units serving with the British and French forces. In addition to its other work, it has recently had the veterinary service assigned to it. Thanks to the methods pursued, the health of the army, even of the new troops, has generally been good. There have been some epidemics of measles, however, in some of the new camps, with kindred diseases. Corrective measures have been taken, and it is believed that the situation is much improved in the cases referred to.

The Militia Bureau.—Due to the incorporation of the National Guard into the service of the United States, the organized militia of the separate states has practically ceased to exist. There are, however, some few bodies, recently organized, and a great amount of work connected with the old organization, which demand the retention of the Bureau as an office of the War Department.

The Signal Corps.—This corps has been reorganized, under the Acts of June 3, 1916, and July 24, 1917, and is divided into the Aviation Section and Signal Section. Under the Aviation Section are placed all matters connected with the procurement and construction of aircraft of all descriptions, their care and operation, the training of the personnel, and the actual fighting use of such machines. Large schools have been established in various parts of the country, from which thousands of mechanics, observers, flyers, and fighters are being graduated. Many factories are at work on machines, and much constructive work has developed some efficient types.

The Signal Section has charge of all the work formerly done by the corps, except that relating to aviation. In addition, many new units of Field Signal troops have been organized and are now in service.

The Cavalry.—Nearly all the work of the cavalry during the past year has been on the Mexican border, where conditions still render a guard necessary. However, some cavalry is in Europe, and many new regiments and brigades are being organized at the present time.

The Infantry.—The Infantry, as is always the case, has had service in all parts of the world during 1917. Many organizations of regulars, National Guard, and special and technical troops are now with General Pershing's forces. They have sustained some losses in trench raids, and otherwise, but, in the main, are now being trained to the sound of the guns. There are garrisons of infantry in all the insular possessions, in Panama, and in Alaska, while in America there are many divisions in training and replacement camps, in addition to the garrisons of the various army posts.

The Coast Artillery.—Several thousand coast-artillery troops are now in Europe, where they will handle the medium and major calibre guns and mortars, and much of the anti-aircraft artillery. The training of this corps has peculiarly fitted it for modern warfare in the field, and it will be called upon to furnish many more organizations for service in France, some of which are now being organized. The coast defenses of the United States are also kept fully manned, and those of the foreign possessions, and training schools for officers and men are in operation at practically all the forts.

The Field Artillery.—Some organizations of this branch are with General Pershing, and have been in action. The remainder are in the Philippines, Hawaii, Panama, and in the United States, by far the largest bodies being in the various training and divisional camps.

Appropriations.—The total appropriations having to do with the army, including the Army Appropriation Act, the Sundry Civil appropriations, the Fortifications Act, the Military Academy appropriations, and various bills for deficiencies, approximated three billion.

Pensions and War Risk Insurance.—There was a decrease in the total amount of pensions paid during the year, as compared with 1916. The total paid to date since the beginning of the system is between four and five billion. The War Risk Insurance Act provided insurance for every officer and man in amounts up to $10,000. The premiums are graded according to age, and average about 80 or 90 cents per thousand per month. Premiums are deducted by paymasters from the soldiers' monthly pay, and the insurance provides for either death or disability (see also XIII, *Life Insurance*).

Secretary Baker's Summary of the Year's Work.—Various criticisms on the conduct of the War Department in the matter of raising and equipping an army of the size necessary for the country to do its maximum part in the great World War led finally to an investigation into the conduct of the war by the Senate Military Affairs Committee. Appearing before this committee Newton D. Baker, Secretary of War, defended his department and its actions in a considerable statement.

The statement may be summarized briefly under the following seven headings:

> (1) A large army is in the field and in training; so large that further increments to it can be adequately equipped and trained as rapidly as those already in training can be transported.
>
> (2) The army has been enlisted and selected without serious dislocation of the industries of the country.
>
> (3) The training of the army is proceeding rapidly and its spirit is high. The subsistence of the army has been above criticism; its initial clothing supply, temporarily inadequate, is now substantially complete, and reserves will rapidly accumulate. Arms of the most modern and effective kind—including artillery, machine guns, automatic rifles, and small arms—have been provided by manufacture or purchase for every soldier in France, and are available for every soldier who can be gotten to France in the year 1918.
>
> (4) A substantial army is already in France, where both men and officers have been additionally and specially trained and are ready for active service.
>
> (5) Independent lines of communication and supply and vast storage and other facilities are in process of construction in France.
>
> (6) Great programmes for the manufacture of additional equipment and for the production of new instruments of war have been formulated.
>
> (7) No army of similar size in the history of the world has ever been raised, equipped, or trained so quickly. No such provision has ever been made for the comfort, health, and general well-being of an army. The health reports for December, for a variety of reasons, became suddenly less favorable than for the preceding months; but the unfavorable conditions have been met and improvement is already apparent.

In all its branches the Army has increased in size. Secretary Baker stated:

> On the first day of April, 1917, the Regular Army comprised 5,791 officers and 121,797 enlisted men; the National Guard. in Federal service, approximately 3,733 officers and 76,713 enlisted men, and the Reserve 4,000 enlisted men. There were also at that time approximately 2,573 officers in the Reserve, but as these were on inactive duty they cannot properly be considered in estimating the strength of the army of the United States at that time. On the 31st day of December, 1917, the Regular Army consisted of 10,250 officers and 475,000 enlisted men; the National Guard of 16,031 officers and 400,900 enlisted men; the National Army of 480,000 men; and the Reserve of 84,575 officers and 72,750 enlisted men. In other words, in nine months the increase has been from 9,524 officers to 110,856 officers, from 202,510 to 1,428,650 men.
>
> During the war with Spain the army at its maximum strength aggregated 272,000 men and officers. The army now in the field and in training is therefore roughly six times as great as the maximum number under arms in the Spanish American war.

Having thus ably shown by a marshalling of cold facts and figures the magnitude of the task already accomplished, however it may compare with the magnitude of the task yet to be done before the war is ended, Secretary Baker proceeded to show how the operation of the Draft law had proved both an economical and efficient method of selecting soldiers, since it had resulted in the raising of an army with no serious dislocation or confusion among the industries and business operation of the country, and had proved a manifestly fair means for selecting the men best able and suited to participate in military affairs. For training officers he cited the system of having two series of Officers' Reserve Training Camps as being highly efficient, since the number of men commissioned from civil life has resulted in a supply of 45,000 officers—a number nearly eight times as great as the number of officers in the regular army on the first day of April.

Cantonments have been built for the training of the National Army which contain water and sewage facilities, refuse-disposal plants, laundries, store-houses, barracks, exchanges, post-offices, and practically all necessary conveniences, comforts and safeguards for soldiers, the latter statement proven by the fact that the death rate among our soldiers is 7.5 per thousand as against a death rate of 20.14 per thousand in 1898, when we learned, at great cost, a valuable lesson.

The Secretary stated that the comparison of the appropriations made for the War Department by Congress was as follows:

> For the fiscal year 1915 Congress appropriated for the War Department $158,000,000; for the fiscal year 1916, $203,000,000; for the fiscal year 1917, $403,000,000; for the fiscal year 1918, $7,527,338,716. In other words, taking 1915 as a normal year, the appropriations for 1918 are nearly 50 times as great.
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> The regular appropriations made by Congress for all governmental purposes for the fiscal year 1915 were $720,000,000, or nearly one-tenth the 1918 appropriations for the War Department alone.
>
> In 1914 the gross value of the products of all the industries of the United States was $24,000,000,000. The appropriations for 1918 for the War Department alone are substantially one-third of this sum.

Throughout the country, on account of various criticisms it has incurred both because of its business methods and the manner in which it has supplied the munitions of war to the army, great interest has been demonstrated in the affairs of the Ordnance Department. Secretary Baker's detailed statement with regard to this department is worthy of serious consideration.

Of the total War Department appropriations for 1918, $3,200,000,000 was for the Ordnance Department. The value of the products of all iron and steel industries in the United States in 1914 was $900,000,000, or less than one-third of the amount to be expended by the Ordnance Department.

Of this gigantic sum the Ordnance Department has already placed contracts amounting to $1,677,000,000.

On April 1, 1917, the Ordnance Department consisted of 97 commissioned officers, occupying 15,000 square feet of office room in Washington. It now consists of 3,004 officers, occupying more than 14 acres of office floor space, and in addition has 26,120 enlisted personnel.

The expansion of this force has been carried on concurrently with the enormous business and industrial operations of the department. The force has been selected, trained, and in part dispatched overseas. Because of inadequacy of office accommodations it has been moved from time to time, one bureau having been obliged to move six times.

In addition to the selection and training of this new force, the making of these great contracts, and the follow-up necessary in the manufacturing processes, a continuous study of new weapons and instrumentalities has been kept up, a constant contact kept with trained men abroad studying the operation of ordnance material in battle, and accordingly modifying designs and plans here by reason of observation and experience.

Many of the classes of ordnance material requiring to be designed, specifications drawn, and contracts let were wholly unfamiliar to our normal military practices. The trench warfare material alone involves commitments of $282,000,000. Some of the contracts cover instruments so modern that our industries had to be adapted to their manufacture.

Many of the Ordnance Department's contracts involve increase of plant facilities or the construction of new plants, intricate systems of auditing and cost accounting, and constant inspection by inspectors who have had to be trained in specially established schools in order to add knowledge of ordnance requirements to their previous mechanical training.

The Quartermaster General's Department, which has also received a considerable amount of criticism, was stated to have received an appropriation of $3,018,000 for 1918; its personnel having been increased from 347 officers to 6,431 officers. The Secretary further stated that by the first day of January, 1918, almost two billion of the appropriation had been obligated by contracts or disbursements, which involved determinations of standards, prices, quantities, creation of new manufacturing facilities, the substitution of materials for insufficient supplies, and many other difficult problems, as well as colossal questions of land and water transportation.

The magnitude of the operations involved are shown by the following statistics from Secretary Baker's speech, "There have been purchased over 19,000,000 blankets, 20,000,000 yds. of over coating and over 30,000,000 yds. each of shirting flannel and suiting, involving an expenditure of over $345,000,000. In cotton goods the department had contracted for 250,000,000 yds. of various cotton cloths. A statement of the purchases to December 29, 1917, follows:

Winter drawers	pair	25,000,000
Winter undershirts		21,000,000
Woolen gloves	pair	11,000,000
Wool light-weight stockings	pair	31,000,000
Wool heavy-weight stockings	pair	21,000,000
Shoes purchased for delivery to Jan. 1	pair	10,000,000
Shoes purchased for delivery Jan. 1 — June 1	pair	10,000,000
Cots		2,100,000

A decided increase was shown in the aviation section of the signal corps, its personnel having increased from 65 officers and 1120 men on the first of April, 1917, to 3900 officers and 82,120 men on the first of January, 1918. The appropriation for this department by Congress amounted to $744,000,000, or five times the 1915 appropriation for the entire War Department.

Secretary Baker stated that the Engineers' Department, whose appropriation of $390,000,000 represented about a 700 per cent. increase over the 1917 appropriation, had organized, trained and equipped technical troops of foresters, stevedores and men for railway construction and operation, to the number of about 120,000. Many of these men have been operating in France for several months.

The construction of storehouses, railroads, barracks, repair-shops, ordnance plants, and terminal facilities in a territory so extensive as to be some 3,000 mi. apart, has been going forward rapidly. It has been necessary to interchange officers with our allies for the purpose of comparing data of various sorts and insuring the maximum amount of coöperation between this country and the nations allied to it.

With regard to the reorganizations recently effected in carrying on the work of his department, Secretary Baker called attention to the following steps which have been taken: (1) The creation of a War Council of elastic membership to take a large supervisory view of all questions of supply and organization. The members of this council being free from the drudgery of detail administration work, can give the government the "highest value of their talents and experiences"; (2) The reorganization of the machinery of the Ordnance Department in preparation for the new phases of its work; (3) The reorganization of the Quartermaster General's department to handle problems tremendously greater than those ever before encountered by it.

The purpose of the Council of National Defense was, according to the War Secretary, "A reconciliation of conflicts and a survey of the national needs and resources." He stated the purpose in organizing the general Munitions Board and its successor, the War Industries Board, as: (1) to assign priorities as among the several departments of the Government and the allied governments in their demands upon the industries of the country; (2) to advise as to supplies of materials and labor; (3) to advise on questions of price; (4) to secure industrial and labor coöperation; (5) to avoid enhancement of prices, confusion of industry, exhaustion of labor and generally to prevent all avoidable evils which might result from the speed and magnitude of the new operations.

Secretary Baker commended the manner in which these duties had been carried out and accomplished in a manner as satisfactory as possible.

Taking a complete view of the situation, he stated that the demands made by the initial rush of preparation had been met in a satisfactory manner, and that great work had been done in the expansion and reorganization of the various technical sections of the department upon the lines recommended and made essential by the principles of industrial management and of efficiency.

On the whole, Secretary Baker's defense of his department's work was aggressive. His statement met fairly and openly the criticisms which have been passed upon his department, combated them fearlessly, and showed wherein steps had been taken to insure the War Department's pursuing its tremendous task, which has as its aim the successful termination of the war. He stated his willingness to entertain criticism that would be of a constructive nature, and the manner in which he has reorganized various phases of his work goes to prove his desire to meet any such suggestions more than half way. The War Department has faced a tremendous task; undoubtedly mistakes have been made; there may have been matters in which more speed could have been attained; but, according to the Secretary of War, with the selection and training of our army in this country, the substantial size of the force now over seas, and the manner in which the great army it is necessary to maintain behind the lines has been organized, a task has been accomplished whose magnitude has been unheard of in the history of the world.

THE NAVY

The Secretary of the Navy has announced that more than three times as many men and nearly three times as many ships are in service as when war was declared, and that 787 vessels of various classes, estimated to cost $1,150,400,000, have been contracted for or actually begun during the current year. Of them, the larger number necessarily must be small vessels, such as submarine chasers and patrol boats. It is believed and averred, but on no official authority, that the construction of battleships has been slackened somewhat in order to concentrate effort upon destroyers and other vessels urgently required for the anti-submarine campaign. From the Navy Department emanates the encouraging statement that "The American Navy will lead the world with its destroyers within eighteen months". This expectation would seem to be justified if one may credit a newspaper dispatch which says that a contract for forty has been awarded to one shipbuilding firm alone. (See also XX, *Aeronautics.*)

Increase in Ships.—New destroyers are to be of a recent design. They will have a speed of 35 knots and improved sea-keeping qualities.

Over 1,200 yachts have been offered to the Government for employment. They vary from the large steamer to the tiny power boat 40 ft. in length. Some are donated outright, some are held at moderate prices, some for charter, and others "at fancy prices". How many of these have been taken over has not been made public.

A special type known as "submarine chasers" has been developed by our Allies. They are swift motor boats, armed with 3-inch guns, and either 80 or 110 ft. in length. Experience has proved the greater value of the longer craft. Some 135 of the 110-ft. class are building with all speed at our navy yards, and 200 more are under contract.

Less is known of the types and numbers of submarines about to be added to the list beyond the letting in May of contracts for 38 of the 800-ton class. Naval opinion tends to discourage sacrificing the construction of destroyers in order to build under-water boats; nor is that opinion wholly at one in the question of type of submarine. Congressional preference seems to lie with the smaller coast-defense class, of which about three times as many as of the "larger fleet submarines" are contemplated. The purely defensive *rôle,* while strategically wrong, usually wins legislative adoption.

Some 10 scout cruisers had been authorized in appropriation bills enacted prior to our entrance into the war, but they are not reported as having been commenced. If ready now they would be extremely useful in convoying transports because of their high speed, strong battery and the four airplanes each is to carry. No light cruisers appear on the programme of construction.

To aid our Allies in the important work of scouting for submarines, and of patrolling, a number of revenue cutters, to employ the old familiar term by which vessels of the United States Coast Guard used to be known, have been taken into the service of the Navy and sent abroad, together with "dozens" of steam fishing smacks, peculiarly adapted to the purpose of sweeping the seas around Great Britain for mines planted by the Germans. The former are armed powerfully enough to engage a U boat.

A special design for a "combination mine sweeper and sea going tug" of 1,000 tons has been prepared at the Navy Department. Some 24 are to be built at once, deliveries to begin "within six months" or in March, 1918.

It is known that our destroyers in British waters have been reinforced by quite a detachment of small, swift craft such as yachts, which, like the revenue cutters, perform well the duties of patrolling and of scouting for U boats.

At the time of this writing, at least one engagement between an American destroyer and a German submarine has officially been announced. It resulted in the undoubted destruction of the latter.

It is gratifying to be able to refer to the admiration expressed by the British Admiralty "for the efficient and seamanlike conduct of the officers and crew of this destroyer". On the other hand, one of our destroyers was torpedoed by a U boat on Oct. 19, one man being killed and several wounded. The destroyer arrived safely into port for repairs.

Official and unofficial advices speak in high terms of our destroyers as being prepared, on arriving at Queenstown, to accept the arduous duties confronting them, as well as of their staunchness of construction and freedom from engine trouble while actually employed in the strenuous service to which they are assigned and in which their officers and men are acquitting themselves so creditably.

So far as is given out to the public, the *Arizona* is the only new battleship added to the fleet. Some eight others are more or less approaching completion with six more in contemplation. Six enormous cruisers of 35,000 tons displacement, 35 knots speed, and armed with 10- and 14-inch guns, are authorized. Possibly some are in process of construction under contracts already placed.

A bold step in engineering has been taken by the Navy Department in the adoption of the "electric drive". Steam turbines generate the current for electric motors on the propeller shafts. This novelty was so successful in the collier *Jupiter* as to encourage the Department to install it on the largest men-of-war ever designed.

Of other vessels, ante-war appropriation bills authorized the construction of four fuel ships, one supply ship, two ammunition ships, one hospital ship, one repair ship, two transports, two destroyer-tenders, and one fleet submarine-tender. Of these the present status has not as yet been published.

The trim and natty appearance of men-of-war in time of peace has vanished under the necessity of disguising them in time of war by painting them in irregular streaks or blotches of various colors—camouflage, in short.

To provide for immediate wants, two merchant steamers, the *Saratoga* and *Havana* of the Ward Line, have been acquired and are now fitting out as hospital ships. Each is to have about 300 beds and to be supplied with every possible modern appliance for the care of the sick and wounded. In this connection it may be stated that the health of the Navy is excellent, the only diseases giving much concern during the war being those of the respiratory tract, such as measles and mumps, that spread for the most part by throat and nose secretions. Only ten cases of typhoid fever have been reported since this war began.

Eighty-seven German merchant vessels caught in our ports by the outbreak of the war have been seized by the Government. Such of their machinery as was damaged by their crews under orders from Berlin has been or is being repaired. A number of these ships have been turned over to the Navy and rechristened, a procedure not in harmony with historical precedent: Heretofore, captured vessels habitually retained their old names under the new flag. (See also XX, *Ship-Building and Marine Engineering.*)

Since all our newest vessels from dreadnaughts down are oil-burners, the question of maintaining a supply of this fuel has assumed national importance. Private interests are seeking legislative permission to extract from certain Government reservations petroleum held for the exclusive use of the Navy. The Secretary of the Navy has strongly urged Congress to deny all such demands. Whether or not all speculators will succeed in their selfish move to cripple the Navy remains to be seen. The bill in question will doubtless come up at the next session of Congress.

Charleston, W. Va., has been chosen as the site for a government armor plant for which $11,000,000 have been appropriated.

Aircraft.—Aviation is receiving marked attention on the part of the naval authorities. Airplanes and seaplanes in great numbers are being acquired, and men to operate them are in training at Pensacola. A large air station is developing at Cold Spring Harbor near Cape May. Seven subsidiary stations are to be established on the Atlantic Coast and as many on the Pacific Coast. The value of the airplane in detecting the presence of the submarine, while less than some enthusiasts claim, is great enough to warrant its construction on an extensive scale even if it were not almost indispensable in "spotting" the fall of shot and in controlling the fire of guns at long ranges. (See also XX, *Aeronautics.*) Since naval airplanes must on occasion descend to the surface of the water or rise from it, they take the particular amphibious form known as seaplanes. Lack of deck space and of an efficient launching apparatus prevent, as yet, the carrying of sufficient seaplanes by men of war, although unquestionably the seaplanes will shortly be an essential part of every ship's equipment.

Rear-Admiral Fiske, U. S. N., proposes a special type of seaplane to carry a torpedo and discharge it against enemy cruisers or battleships. His invention, patented in 1912, while not adopted by us, has already been employed by the Germans, who in this manner sank the *Gena* on May 2 of this year, following the example of the British who thus destroyed four Turkish ships in the Sea of Marmora in August, 1915.

Mention should be made of dirigible balloons for the Navy. Some 16 of an improved type are now building. The trial of the first one delivered is said to be satisfactory. These balloons are to be used in patrolling our own coast, but it is not unlikely that they will be sent across the Atlantic.

The site of the Jamestown Exposition, a tract of land 440 acres in extent and capable of enlargement by dredging to over 1,000 acres, has been purchased for a fleet base at Hampton Roads. Besides affording facilities for training some 10,000 men, it will be a submarine and aviation operating base. Oil storage and fueling apparatus, supply storehouses, mine, net and torpedo storehouses and fleet recreation and drill fields are included in this broad plan.

All radio stations are now placed under the control of the Navy, and diligent search is being made for concealed private wireless plants.

The Fleet.—The first American officer to lose his life in this war was Lieut. C. C. Thomas, U. S. N., in command of the guns' crew on board the American steamer *Vacuum*, torpedoed by a German submarine on April 28. His death was the result of exposure after the sinking of the ship.

The successful convoy of the first contingent of our troops to France by a squadron under Rear-Adm. Albert Gleaves, U. S. N., has elicited general and official approbation. How much of this same work is still being done, and how well, must be inferred from the immunity enjoyed up to the present moment by the transports carrying further detachments. The transport service is organized, manned and operated by the Navy.

The steamer *Antilles* of the Southern Pacific line was torpedoed and sunk on Oct. 17 on her return voyage, in spite of the armed vessels convoying her, and more recently the *Finland* under similar circumstances has shared the same fate. The first loss in action of a distinctly naval craft is that of the patrol boat *Alcedo*, torpedoed by a German submarine in November, in foreign waters. Unhappily it is necessary to record the death of three officers and several men. The sinking of the destroyer *Chauncey* through collision was reported on Nov. 21. On Dec. 6 the destroyer *Jacob Jones* was torpedoed while on duty in foreign waters. A regrettable incident is announced by the Navy Department in the killing by gun-fire from an American patrol vessel of an officer and an enlisted man on board an Italian submarine which failed to respond to the established signal of recognition. It is presumable that some of our anti-submarine craft are operating in the Mediterranean. This presumption is strengthened by the cable report that American sailors have recently been seen in Rome. A brigade of marines is believed to form part of General Pershing's army.[1] That these "amphibious" soldiers will maintain the high reputation of their honorable corps is not open to doubt.

Personnel.—Upon Adm. W. S. Benson, Chief of Naval Operations, reposes the tremendous responsibility which his title implies.

The Navy is as yet without a general staff. The duties pertaining to such an organization are performed by the Chief of Naval Operations. In all probability he has the counsel and well digested thought of the "General Board" of which he is President *ex-officio*.

He went to Europe in November as the naval member of a commission sent by the President to confer with our principal Allies. From the President's public announcement of his desire to see established a closer coöperation on the part of all the powers now engaged in war with Germany it may be presumed that Admiral Benson will return with a well-matured scheme for our fleet's taking a still larger share in the work of making the world safe for democracy. At the time of this writing nothing is known beyond the fact that he did go abroad. A General Staff is considered absolutely necessary by students of naval warfare; never more so than at present. Such a body is to be found in the admiralties of practically all the great powers.

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[1] A press report from France, dated Jan. 3, 1918, confirms this statement.—Ed.

Vice-Adm. W. S. Sims is in command of all our vessels, both regular and auxiliary, now operating abroad in Atlantic waters. His selection for this important duty is universally commended, for the navy has no officer of his rank superior to him in professional capacity and in the rare gift of inspiring those subject to his orders. That he stands high in British estimation is shown by their assigning him to the command of all Allied naval forces in Irish waters during the temporary absence of the British Commander-in-Chief. At the present writing none of our battleships have gone abroad, but sooner or later some are not unlikely to be sent to the aid of our Allies.

Adm. H. T. Mayo remains in command of the Atlantic Fleet, to-day twice as large as in peace times, as every battleship and cruiser that was in reserve has been put into full commission.

Adm. Wm. B. Caperton commands the Pacific Fleet now in South Atlantic waters and Adm. Austin M. Knight our Asiatic Fleet.

To provide at least in part for the vast numbers of men and officers required for our greatly expanded Navy, the President signed on May 22 a bill authorizing an increase of strength from 87,000 to 150,000 and the granting of temporary commissions or warrants to meet the exigencies of the moment. In addition two classes at the Naval Academy have been graduated instead of the customary one class, thus adding some 350 ensigns to the available list.

Similarly, the Marine Corps is nearly doubled in size, the strength being increased from 17,400 to 30,000. Thousands of "expert gunners" are serving in the gun crews on American merchantmen.

The Medical Corps has profited by having at its disposition some 180 physicians and surgeons already enrolled in its Reserve Corps. An unknown number of other physicians have been taken in with temporary commissions as acting assistant surgeons.

A notable feature in administration peculiarly characteristic of this war is the enthusiastic and voluntary service of scores of our leading experts in various branches of science and industry. Such unpaid loyalty is beyond praise.

The seven original members of the Advisory Commission to the "Council of National Defense" were Daniel Willard, President of the Baltimore & Ohio R. R., Samuel Gompers, President of the American Federation of Labor, Dr. Franklin H. Martin, of the American Society of Surgeons, Howard E. Coffin, of the Society of Automobile Engineers, Bernard M. Baruch, a successful New York business man of great capacity, Dr. Hollis Godfrey, of the Drexel Institute, Philadelphia, and Julius Rosenwald, President of the Sears-Roebuck Co. While this Council is chiefly concerned with army matters it has to help the business of the navy as well. Through an unfortunate and doubtless unintentional provision of the Food Control Act, all the members of this Council felt themselves obliged to resign.

A National Research Council, appointed by the President, is enjoying the coöperation of the four principal engineering societies of the country and the financial assistance of the Engineering Foundation. Practically every branch of science and mechanical art is represented in this Council. The naval member is Chief Constructor David W. Taylor, U. S. N.

Secretary Daniel's Summary of the Year's Work.—With the new session of Congress it was but natural to expect that legislative investigation into the conduct of the war and navy departments would ensue. Both these divisions of the government organization had been brought face to face with tremendous new problems.

New subdivisions had had to be created to handle the vast bulk of business which had to be investigated. There had been criticisms throughout the country as to the manner in which this work had been handled, and it was a foregone conclusion that Congress would take cognizance of this criticism in some form of official investigation.

Secretary Daniels, of the Navy Department, prepared the following preliminary statement concerning the work done under his administration to meet conditions essentially imposed by the European conflict. By the act of August 29, 1916, certain plans were developed for the increase of the navy. The outstanding features of this Act Secretary Daniels summarized as follows:

(1) Developments in Europe made it essential for us to get possession of any information that would be of benefit to our Government and the Navy. Obviously it was essential to keep such data confidential, which would not have been practicable had it been necessary to account in detail for the funds used in its collection. The act vested the Secretary of the Navy with discretionary powers as to accounting for the money so used.

(2) Provided that the Chief of Naval Operations should have not less than 15 officer assistants, and in order to give his office proper and necessary powers for planning and preparing for war, provided that any orders that he might issue in performing the duties assigned him should have full force and effect as if from the Secretary himself.

(3) Provided for expenses of and experimental research work by the civilian naval consulting board, and for extended investigation and experimentation by the technical bureaus of the Navy Department.

(4) Increased appropriation for aeronautics from $1,000,000 to $3,500,000.

(5) Provided for projectile and armor-plate plants.

(6) Appropriated $480,000 for torpedo nets for battleships.

(7) Appropriated $4,503,524 for a reserve of ordnance supplies.

(8) Provided for a new dry dock at Philadelphia and Norfolk.

(9) Provided for an additional gun shop at Washington yard.

(10) Provided for a structural shop at Norfolk.

(11) Appropriated $280,400 for additional ordnance storage facilities.

(12) Made an initial appropriation for a reserve of medical stores.

(13) Authorized the expansion of the enlisted force of the Navy, in time of national emergency, from 68,700 to 87,000 men and increased the number of apprentice seamen from 3,500 to 6,000.

(14) Carried personnel legislation, including Naval Reserve Force, which upon the declaration of war made possible the utilization of men trained in the service afloat who have rendered valuable service.

(15) Provided for operation of Coast Guard and Lighthouse Service as part of the Navy in time of war or national emergency.

(16) Increased the limitation on cost of repairs and changes to capital ships so that they could be made immediately available for service with the fleet without awaiting congressional authorization.

(17) Authorized the expansion of the enlisted force of the Marine Corps in the time of emergency from 9,947 to 17,400 men.

(18) Provided for establishment of camps of instruction for citizens applying and designated for training.

(19) Three-year programme authorized and initial appropriations made for commencement thereof.

THREE-YEAR PROGRAMME

Type	Number	Appropriated Act Aug. 29,1916	Appropriated Act Mar. 4, 1917	Remaining
Battleship	10	4	3	5
Battle cruiser	6	4	1	1
Scout cruiser	10	4	3	3
Torpedo boat destroyer	50	20	15	15
Fleet submarine	9	..	..	9
Coast submarine	58	30	18	10
Fuel ship	3	1	..	2
Repair ship	1	..	..	1
Transport	1	..	..	1
Hospital ship	1	1	..	..
Destroyer tender	2	..	1	1
Fleet submarine tender	1	..	1	..
Ammunition ship	2	1	..	1
Gunboat	2	1	..	1
Total	156	66	42	48

In my annual report I have recommended appropriations to complete the three-year programme authorized in 1916.

(20) Authority granted to increase total cost of vessels appropriated for 20 per cent. if constructed in Government yards; to pay premiums not to exceed 20 per cent. above contract price if built outside of navy yards, and to construct battle cruisers on cost plus percentage basis.

(21) Appropriated $6,000,000 for improvement and equipment of navy yards for construction of ships.

The Secretary stated that this Act carried appropriations amounting altogether to $312,886,060.25, over $150,000,000 more than the preceding appropriation. This legislation, with its appropriation, became effective immediately after the Act was passed. Within a short time the amount of the appropriation was increased by an amount in excess of $515,000,000. This increase was provided by the Act of March 4th, 1917, which carried an emergency appropriation of $115,000,000 and authorized the construction of 20 additional coast submarines of the 800-ton type, for which $18,000,000 was appropriated—this last item being in addition to the second increment of the three-year programme. A further appropriation of $12,000,000 was provided for the improvement and equipment of navy yards for ship production purposes. On account of the generosity of these appropriations the Navy Department has not needed to draw very largely upon the allotment of $1,368.000 assigned to it as its share of the $100,000,000 fund for national security and defense. The Secretary asked the various bureaus and offices to prepare and submit to him estimates of the funds required to place the activities of which they had charge in "the highest state of preparedness in the quickest possible time," appropriations which amounted to $515,000,000 (included in the act approved June 15, 1917). By the Act of October 6, 1917, $561,000,000 was devoted for naval purposes, including an additional emergency fund of $100,000,000. The Secretary further stated that additional appropriations had been asked for in the last few days on account of new contingencies that had arisen.

With regard to the airplane and submarine in the present war, Mr. Daniels stated his gratification in recalling that United States troops had been convoyed to France successfully in the face of possible submarine attacks, and that our patrol boats and destroyers had successfully performed their duty of guarding our coasts against the submarines and of destroying them in European waters. He further stated that within the past year the navy had made considerable strides in aeronautics, in spite of the fact that it was hampered by a lack of manufacturing facilities. To combat this the Navy Department has erected its own manufactory for airplanes in Philadelphia, where considerable work already has been accomplished and where there are great possibilities for the future efficient development of this branch of the service.

Mr. Daniels stated that the problem of patrol boats for use along our coast was another new situation which his department had had to meet. By the use of private craft suitable for this service, and by increased construction, this emergency has been met in a satisfactory manner.

The increase of ships in commission to a number over 1000, in contrast to the 300 in commission one year ago, made an increase in the personnel of officers and enlisted men necessary. Mr. Daniels' figures for the enrollment in the navy on April 6th represent 64.680 men and 4,376 officers. To-day the navy numbers 166,939 men and 6,912 officers, while there are also 33,589 marines and 1.218 officers. The Naval Reserve amounts to 54.000 men and officers, 16.500 men and 856 officers being of National Naval Volunteers. The total of this force approaches the 300,000 mark.

The Secretary spoke of the work required to equip the fleet. A tremendous task necessitating the building of ships, the providing of guns and ammunition, the enlistment of men and the procuring of provisions for these men. On account of the small ship-building resources of our country, additional construction was essential to equip both government and privately owned shipyards to meet the new demand made upon them. Nor was there the equipment in the country to make the requisite machinery for the large number of new vessels under construction.

The Secretary's statement declares frankly that, with such great speed necessary, the work has not been always done with perfect smoothness and without delay. But new methods of contracting have been demanded and devised in a manner which, while not perfect, has nevertheless done the work. Some of these contracts have been made on a cost plus 10 per cent. basis, a method which the Secretary does not like and will not use except in cases where it is impossible to do otherwise, the purpose of this plan being to insure shipbuilders against financial loss and the

Government against heavy profits accruing to the builders, thereby placing an additional burden upon the taxpayers. A special compensation board has been created to handle such problems.

Financial assistance must be rendered to manufacturing plants in order that they may expand to cope with the new demands made upon them, and this assistance Mr. Daniels stated Congress had permitted by authorizing the advancement of funds. The Navy Department has never advanced such funds without perfect security, bonds being required or the Government retaining title to the machinery purchased with such funds.

In the matter of ordnance, the Navy Department has been compelled to provide guns not only for its battleships but also for the army of merchant vessels. Mr. Daniels commended the Bureau of Ordnance for its foresight in regard to arrangements for the armament of navy vessels and for the vessels yet unbuilt. To further this end the plant at Charleston, W. Va., is being rushed to completion. Here both castings and the forgings that go with them will be made for our guns. In addition the plant in Washington has been expanded and is working continuously.

Mr. Daniels assigns credit to the Division of Operations and the Bureaus of Supplies and Accounts for the manner in which they have coöperated to maintain a continuous stream of supplies to the ships now on foreign service, citing them as "one example of the efficient team work of the entire naval establishment." He further states, "We have worked as one organization, cutting red tape ruthlessly but without disorganizing the entire machinery of the navy."

In conclusion the Secretary commends the Bureau of Medicine and Surgery especially for the manner in which it has safeguarded the health of the navy; the Bureau of Construction and Repair for its "vision and highest capacity" in speeding the building of hulls; the Bureau of Steam Engineering for its diligence and efficiency in providing engines; and the Bureau of Yards and Docks both for its rapidity in enlarging its own equipment and for the assistance it has rendered to outside manufacturers working for the department. In conclusion Secretary Daniels stated, "The navy has been called upon by the country to guard our coast, to convoy our merchantmen and troop ships, to aid our Allies in the sinking of submarines and to be prepared with its main fleet for any eventualities. The great question is, has the navy measured up? It is my firm belief that at the close of these investigations your answer will be that it has, and the country has every reason to repose confidence in the navy."

This forecast of the investigation's outcome has proved notably accurate. In his subsequent examination before the committee Secretary Daniels answered his inquisitors in a highly satisfactory manner, and is considered by the press and the public to have come through the investigation with flying colors. Other officials of the navy who have been examined have made as fair a record as their chief. The congressmen who expected to find "soft spots" in certain bureaus have been unable to locate them. The Navy Department has met in a manner eminently satisfactory to the entire country, to our Allies, and to the investigators, and finally to itself, the new demands made upon it. Its position in the world war is a crucial one for the United States and the countries fighting with it, for on its work in the efficient transportation of both men and supplies, the sinews of war so necessary for the defeat of German ambitions and designs, and in the effectual elimination of the lessening submarine menace, depends to a vital extent the outcome of the war.

XII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

S. S. HUEBNER

BUSINESS CONDITIONS IN 1917

A Year of Extremes.—All business barometers customarily used in gauging the degree of activity in finance, manufactures and commerce continue to reflect to an increasing degree the abnormal conditions arising out of the war. Business in the United States was on a war basis during 1915 and 1916, it is true, but the actual participation of this country in the conflict has caused tremendous business adjustments and has rendered business conditions much more abnormal than during the preceding two years. The year 1917 may thus be truly characterized as a year of extremes, some business lines being favored with unprecedented activity, while others are experiencing the utmost depression.

A brief *résumé* of the leading barometers of trade will serve to make the contrast clear. On the one hand, the indices of commerce and manufactures furnish evidence of an unequaled business boom (see *infra*). Merchandise is leaving our ports at the rate of 6¼ billions a year, or nearly two billions in excess of the year 1916, and 2.3 times the amount shipped during the fiscal year 1915. The balance of trade in our favor reached the stupendous total of 3½ billions, or between five and six times that of any year in pre-war trade. Bank clearings for the country, exclusive of New York City, exceeded those of 1916 by 30 per cent. and those of 1915 by 74 per cent. Railroad gross earnings broke all records, being 11.78 per cent. larger than in 1916, and this gain comes on top of an increase of 23.37 per cent. for the preceding year. New incorporations increased by a billion dollars over 1916, and are 1.4 times those of 1915 and 4.5 times those of 1914; while listings of new securities on the New York Stock Exchange for the first 10 months of 1917 exceed the previous year's total for the same period by 66 per cent. and those of 1915 by 201 per cent. Up to the time of writing, business failures are also lower by 11 per cent. in number and six per cent. in the amount of liabilities involved, and this comparison is made with a very favorable record for 1916. On the same basis of comparison, pig-iron production approximately equals the record output of 1916 and surpasses that of 1915 by 41 per cent., while the unfilled orders of the U. S. Steel Corporation average 16 per cent. higher than in the preceding year. Prices of iron in the meantime increased from $25.90 at the close of 1916 to $35.09 early in December, 1917. Unfortunately, reliable figures of copper production are not available, but the best accounts obtainable indicate an output and a price for the metal about equal to that of 1916. In conjunction with all this prosperity, it is worthy of note that rates for money, although showing a tendency to increase, have remained reasonably low for essential business purposes. Moreover, the nation has been blessed with a satisfactory crop, the cereal portion of which is nearly one billion bushels in excess of the 1916 yield.

But, as indicated above, the nation's entrance into the war has had a crushing effect in certain other directions. The reasons for this will be stated later; let it suffice at this time merely to indicate the extremes that have resulted. The security market has experienced one of the greatest declines in its history, a representative list of railroad stocks having shrunk over 22 per cent. in 11 months; a well chosen list of industrial stocks, over 27 per cent.; and a selected list of copper stocks, over 29 per cent. During the same period representative investment bonds have declined between 12 and 13 per cent. It should also be noted that both stocks and bonds were even at the beginning of December at their lowest and that the market showed no signs of recuperation. Building operations have likewise fallen off by approximately one-third. On every hand there seems a disposition to force capital into government bonds or into business enterprises which are of the war-aiding variety. Lastly, it should be noted that the tendency towards increased prices has run riot during 1917. Although the price levels of 1915 and 1916 seem astonishingly high, the November level of 1917, as judged by Bradstreet's index number, was 41 per cent. higher than that of a year previous. Not only has the rapidly rising price level affected practically all commodities required in the home, but, by increasing the cost of operation, it has disastrously reduced the net earnings of railroads, public-service companies and other industries, which find it difficult, if not impossible, to raise correspondingly the price of their services. Great impetus has also been given to wage demands on the part of labor, and at probably no time have labor strikes been so numerous, the demands for increased pay so large and the victory so easily won (see also XV, *Labor*).

Statistics.—Following the plan adopted in previous issues of the YEAR BOOK, we present a series of tables which summarize the business conditions of 1917 in comparison with those of 1916 and earlier years, as shown by those leading indices[1] which are generally accepted as the truest barometers of industry, trade and finance. The tables relating to stock-market activity, including summaries of "Shares of Stocks and Bonds Sold", "Average Security Prices", and "New Securities Listed", indicate the activity or lack of activity during the year in the security market and the condition of the investment demand. The tables relating to "Loans and Deposits of the New York Clearing House Banks" and "Domestic and Foreign Money Rates" furnish an idea of the conditions surrounding the money market during 1917, while the tables on "Bank Clearings", "Foreign Trade", "Cereal Production", "Railroad Earnings", "Idle Cars", "Production of Iron and Copper", "Building Construction", and "Business Failures", serve to furnish a view of the year's activity in mercantile and manufacturing lines. For purposes of comparison, the figures are given by months for the years 1916 and 1917, and to make possible a further comparison, the totals for the several items, wherever possible, are given also for 1915 and 1914.

AGRICULTURE

Crop Production.—The grain-crop statistics of the United States for 1917, as indicated by the October estimates of the Department of Agriculture, present a favorable showing as regards the grand total, although in the case of one major crop, wheat, the yield proved very disappointing. Considering the five leading cereals, wheat, corn, oats, barley and rye, the estimated yield for 1917, as indicated by the accompanying table, shows a total of 5,706,000,000 bu., an increase of 942,000,000 bu. over 1916, or 19.3 per cent. But this huge increase must be viewed in the light of the fact that the 1916 yield was unusually small, being 1,111,000,000 bu. under that of 1915. Fortunately for the food situation of 1917, especially in view of the small supplies carried over from the preceding year, the comparatively small yield in foreign countries and the necessity of maintaining heavy exports for the support of our own armies and our allies, other leading food products, particularly the potato crop, show a gratifying increase. (See also XVI, *Agriculture.*)

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[1] The author is indebted for the statistical data presented in most of the following tables to the monthly compilations prepared from authentic sources by Roger W. Babson, and issued periodically in "Babson's Desk Sheet of Tables on Barometric Figures for Business Conditions". In the collection of data much assistance has been obtained also from the excellent compilations and reviews published periodically by the *Commercial and Financial Chronicle.*

Unfortunately the one dismal crop item is wheat, especially when it is considered that this poor crop follows an equally poor yield in 1916. The October estimate places the yield at 659,797,000 bu., as compared with 608,000,000 bu. in 1916, 1,002,000,000 bu. in 1915, and a five-year average (1911-15) of 806,361,000 bu. The spring-wheat yield was fair, being estimated at 242,450,000 bu., compared with only 153,000,000 bu. in 1916 and a five-year average (1911-15). of 263,746,000 bu. Owing to a severe drought, however, the winter-wheat crop proved a great disappointment, the estimated yield amounting to only 417,347,000 bu. in 1917, as compared with 455,000,000 in 1916, 655,000,000 bu. in 1915, and a five-year average of 542,615,000 bu.

The deficiency in wheat, however, was much more than compensated by the yield of corn, the nation's leading crop. Here a record yield is presented, the October estimate being 3,210,000,000 bu., an increase of 24.3 per cent. over the actual yield of 1916, and 456,000,000 bu. greater than the five-year average for 1911-15. Most of the remaining important agricultural crops also present a very favorable showing as compared with 1916. The yield of oats is placed at 1,580,000,000 bu., or 26.3 per cent. more than the actual yield of 1916, and 328,000,000 bu. in excess of the five-year average. The barley crop is estimated at 201,000,000 bu. or 11.5 per cent. more than the yield of 1916 and nearly 4,500,000 bu. in excess of the five-year average. As regards the yield of the remaining five most important crops, the showing, as compared with 1916, is as follows: rye, 56,944,000 bu., an increase of 18.1 per cent.; buckwheat, 17,895,000 bu., an increase of 51.1 per cent.; white potatoes, 452,923,000 bu., an increase of 58.7 per cent.; sweet potatoes, 87,244,000 bu., an increase of 23 per cent.; and tobacco, 1,243,000,000 lb., an increase of eight per cent. Only in the case of flaxseed, rice, hay and apples, excluding from consideration certain minor products, does the 1917 yield show a decline as compared with 1916, the decreases being, respectively, 26.7 per cent., 19.3 per cent., 16.5 per cent., and 12.7 per cent. Yet in the case of rice and hay the year's yield shows a substantial increase over the five-year average.

CEREAL PRODUCTION
(000,000 omitted)

Production (bushels)	1917[1]	1916	1915	1914	1913	Previous Records	
Winter wheat	417	455	655	685	523	685	(1914)
Spring wheat	242	153	357	206	240	357	(1915)
Corn	3,210	2,718	3,055	2,673	2,447	3,210	(1917)
Oats	1,580	1,230	1,540	1,141	1,122	1,580	(1917)
Barley	201	184	237	195	178	237	(1915)
Rye	56	42	49	43	41	56	(1917)
Total	5,706	4,782	5,893	4,943	4,551	5,993	

[1] October estimate; the final December estimate is given under XVI, *Statistics of Agriculture.*

Cotton Production.—The Government's October statement placed the condition of the cotton crop on Sept. 25 at 60.4 per cent. of normal, as compared with 56.3 per cent. on the corresponding date of 1916, and 65.7 per cent. as the average on Sept. 25 of the past 10 years. The condition of 60 4 per cent. forecasts a yield per acre in 1917 of 168.3 lb. and a total production of about 12,047,000 bales. In 1916 the production was 11,449,930 bales, in 1915, 11,191,820 bales, and for the five-year average (1911-15), 14,176,000 bales. The 1917 yield is thus a very disappointing one in view of the small crop in each of the two preceding years, particularly because of the huge demand for cotton to meet war requirements. It is largely because of this small yield, together with the increased requirements, that the price of spot cotton has passed the extremely high figure of 30 cents per pound. (See also XVI, *Agriculture.*)

Prices of Staple Agricultural Products.—Owing to the huge export demands and the general tendency towards inflation, current prices of agricultural products have reached a level considerably above that of 1916 and very much higher than that of pre-war days. The following table of farm prices prevailing on Nov. 1, as published by the Department of Agriculture, shows that the substantial increase in prices has been general:

	1917	1916	Five-Year Average, 1911–15
Wheat (bu.)	$2.00	$1.584	$0.885
Corn (bu.)	1.46	0.850	0.653
Oats (bu.)	0.617	0.490	0.386
Barley (bu.)	1.113	0.832	0.590
Rye (bu.)	1.688	1.153	0.762
Buckwheat (bu.)	1.542	1.029	0.741
White potatoes (bu.)	1.278	1.357	0.610
Sweet potatoes (bu.)	1.112	0.806	0.747
Flaxseed (bu.)	2.959	2.347	1.489
Cotton (bales)	136.50	90.00	50.50
Apples (bu.)	1.175	0.876	0.695
Hay (tons)	15.16	9.99	11.39

Thus it appears that the average price for nine leading farm products—wheat, corn, oats, barley, rye, buckwheat, white potatoes, sweet potatoes and flaxseed—increased 31 per cent. as compared with 1916, and slightly over 100 per cent. as compared with the five-year average (1911-15). As compared with this five-year average the 1917 price for wheat shows an increase of 126 per cent. For other leading crops the gains were as follows: corn, 123 per cent.; oats, 60 per cent.; barley, 88 per cent.; rye, 124 per cent.; white potatoes, 109 per cent.; flaxseed, 99 per cent.; cotton, 172 per cent.; and apples, 69 per cent. (see also XVI, *Agriculture*, and *Statistics of Agriculture*.)

IRON AND STEEL TRADE

Iron Production.—The unprecedented pace in pig-iron production, discussed in the YEAR BOOK for 1916 (p. 324), has been continued during all of 1917 with comparatively little variation. Present production is at the rate of 3,300,000 tons a month, or twice that prevailing at the beginning of 1915. With the exception of February, every month of 1917 showed a production exceeding the three-million ton mark, as was also the case throughout 1916. For the first 10 months of 1917 total production amounted to 32,088,000 tons, an increase of 41 per cent. over the corresponding production of 1915, and only 1.4 per cent. under the unprecedented ten months' output of 1916. Total production for the year 1916 reached the stupendous amount of 39,025,000 tons, and the output of 1917 bids fair almost to equal that record. (See also XVII, *Iron and Steel.*)

Prices for iron have likewise maintained a remarkably high level. For January, 1916, the price per ton averaged $17.90; by the close of the year it had risen to $25.90. Subsequently the unprecedented demand caused prices to rise beyond all reasonable limits, the high price of $49.90 prevailing during the months of July, August and September. Subsequently, owing to the Government's policy of controlling prices (see *infra*), the level has fallen to $35.90. Despite this drop, however, the price level is still nearly 200 per cent. in excess of that prevailing at the beginning of 1915. In its summary of the iron and steel market for the last week of November the *Iron Age* presents the situation as follows:

> The week has seen an increasing demand for steel products both from the Government and from manufacturing consumers. Many of the latter are buying for requirements not directly growing out of the war. Steel absorbed by the Government and by war contracts is a growing factor and is made to seem still larger as output is cut down by coal and coke shortage. . . .
>
> Fear of even a greater shortage in pig iron has caused an active market for delivery in the first half of 1918. Some makers are withdrawing from the market for the first half, having sold all that they can deliver if fuel conditions get no better. . . . The four dollars more that must be paid for Southern iron is causing a greater pressure on Northern furnaces to take care of Central Western foundries. The whole pig iron situation is growing more acute and Government intervention to secure prompt iron for castings needed for war machinery is very common.

The Steel Trade.—The steel trade, as was the case in 1916, is experiencing the greatest boom in its history, a situation traceable in large part to the immense amount of steel required for the completion of war orders. The volume of this business is indicated by the record of unfilled orders of the U. S. Steel Corporation. Such orders, usually considered an excellent index of trade, show an average of 11,030,972 tons for the first ten months of 1917, as compared with 9,402,233 tons for the corresponding period in 1916, 4,727,479 tons in 1915, and 4,222,281 tons in 1914. In other words, the unfilled orders of the U. S. Steel Corporation for the first ten months of 1917 average nearly three times the total for the corresponding period in 1914. The highest record was attained in April, when the average for the month stood at 12,183,083 tons. Since that time the total has declined rather rapidly, the average for October being 9,009,673 tons. The totals of unfilled orders by months for the last three years are as follows:

	1915	1916	1917
January......	4,248,571	7,922,767	11,474,054
February.....	4,345,371	8,568,966	11,576,697
March........	4,255,749	9,331,001	11,711,644
April........	4,162,244	9,829,551	12,183,083
May..........	4,264,598	9,937,798	11,886,591
June.........	4,678,196	9,640,458	11,383,287
July.........	4,928,540	9,593,592	10,844,164
August.......	4,908,455	9,660,357	10,407,049
September....	5,317,618	9,522,584	9,833,477
October......	6,165,452	10,015,260	9,009,673
November....	7,189,489	11,058,542	8,897,106
December....	7,806,220	11,547,286	9,381,718

PRODUCTION OF IRON AND COPPER

	Pig Iron, tons (000 omitted)		Copper[1], pounds (000 omitted)	
	1917	1916	1917	1916
January...	3,151	3,185	205,000	185,000
February..	2,645	3,087	195,000	190,000
March	3,251	3,338	215,000	195,000
April	3,335	3,228	210,000	205,000
May......	3,417	3,361	230,000	210,000
June......	3,270	3,212	225,000	180,000
July.......	3,342	3,226	210,000	170,000
August....	3,248	3,204	175,000	171,000
September.	3,134	3,202	160,000	185,000
October....	3,303	3,509	170,000	190,000
November.	3,206	3,312	185,000	205,000
December..	2,883	3,171	190,000	225,000

[1] Estimated.

THE COPPER TRADE

As was the case in 1916, the prosperity existing in the iron and steel business has been fully duplicated in the copper industry, and the showing again is dependent upon the heavy use of copper in connection with the war. Unfortunately, only estimates of the production are available. These place the total production for the first ten months of 1917 at 1,600,000,000 lb., as compared with 1,691,000,000 lb. for the corresponding period of 1916, 1,084,000,000 lb. for 1915, and 1,241,000,000 lb. for 1914. But while the production of the ten months is practically the equivalent of that for the same period of 1916, it is noteworthy that a tremendous rise in the price of the metal occurred. During January, 1915, the average price for electrolytic copper at New York was 13.64 cents. Following that period the price of the metal showed a gradual rise until it reached an average of 24.01 cents for January, 1916, 33.82 cents for December, 1916, and 36.22 cents for February, 1917. This latter price represents the high-water mark. Since then there has been a rapid but gradual decline until 23.50 cents was reached in October, 1917, this being the price fixed for the metal by the Government. Despite the declining tendency in the price during the year, however, it should be noted that the average price for the first eleven months of 1917 was 30.48 cents, as compared with 26.39 cents for the corresponding period of 1916, and 16.89 cents for 1915.

The heavy demand for the metal at greatly increased prices, however, has not had a corresponding effect upon the quotations of leading copper shares. Probably because of the system of excess-profits taxation (see XIII, *Public Finance*) and the tendency of the security market to discount future conditions, copper shares have participated actively in the severe decline recently witnessed in the security market (see *infra*). At the close of November the price of Babson's list of 20 active and representative copper stocks had fallen to an average of 39.3, as compared with 80 early in 1907, 28.6 late in 1907, 60.8 in August, 1909, and 31.9 in December, 1914.

FOREIGN TRADE

The discussions of our foreign trade in the last two issues of the Year Book (1915, p. 329; 1916, p. 326) emphasized the fact that we were dealing with an abnormal situation, and the same may again be said for the year 1917 to an even greater degree. Wholly as a result of the huge demands upon us for supplies and materials necessary for the prosecution of the war and the enormously increased price level at which nearly all commodities must be valued, the exports of the United States have reached a monetary value far beyond any possible expectations that might have been entertained prior to the beginning of hostilities in 1914. Exports of merchandise during the fiscal year 1917 amounted to $6,294,000,000, against $4,333,000,000 in 1916, $2,769,000,000 in 1915, and $2,365,000,000 in 1914. Imports of merchandise, on the other hand, also showed a large increase, standing at $2,659,000,000 in the fiscal year 1917, as compared with $2,198,000,000 in 1916, $1,674,000,000 in 1915, and $1,894,000,000 in 1914. The net balance of American exports for the fiscal year 1917 reached the unprecedented total of $3,635,000,000, as compared with a record balance of trade in pre-war days of $666,431,000 in the fiscal year 1908. It is also worthy of note that the 1917 balance of trade exceeds the previous record of 1916 by $1,500,000,000. (See also XIX, *External Commerce.*)

Foreign-trade returns for the fiscal year 1917 thus show, as does no other business barometer, the large part played by war orders in our present prosperity. But the marvelous increase in exports is also in itself conclusive proof that the present pace cannot be continued following the return of peace and the consequent discontinuance of existing extraordinary war demands. Prior to the war 278 millions represented the greatest value of merchandise exports for any month (November, 1912). Then followed in rapid succession the records of February, 1915 (300 millions), October, 1915 (336 millions), December, 1915 (359 millions), March, 1916 (410 millions), May, 1916 (474 millions), August, 1916 (510 millions), September, 1916 (515 millions), November, 1916 (517 millions), December, 1916 (521 millions), and January, 1917 (613 millions). Since that time, owing largely to embargoes or lesser restrictions on exports of specified articles or with reference to certain European neutrals (see *infra*), a considerable decline has occurred, the total for September, 1917, being 456 millions. Yet, despite the decline of recent months, the aggregate of exports for the first nine months of 1917 totals $4,607,000,000, as compared with $3,950,000,000 for the corresponding period of 1916, a gain of approximately 19 per cent.

An analysis of our foreign-trade returns shows several vital features, all emphasizing again the importance of war conditions. The first relates to the great increase in exports to Great Britain, France, Russia, Italy and Canada. To the United Kingdom alone our exports in the fiscal year 1917 reached some $2,000,000,000, an amount $500,000,000 greater than in 1916 and only slightly smaller than our total foreign shipments during 1911. Exports to France totaled $1,011,000,000, an increase of $383,000,000; to Russia, $558,000,000, an increase of $249,000,000; to Italy, $360,000,000, an increase of $91,000,000; and to Canada, $787,000,000, an increase of $319,000,000. (See also XIX, *External Commerce.*)

Secondly, the increase in exports was shared quite generally by the various leading groups of commodities. According to the *Commercial and Financial Chronicle's* detailed summary, exports of breadstuffs increased during the fiscal year 1917 by 103 millions and chemicals and drugs by 60 millions. Steel and manufactures thereof increased from 545 millions to over 1,010 millions; brass and manufactures, from 133 millions to 362 millions; copper and manufactures, from 149 millions to 249 millions; cotton, from 336 to 515 millions; and cotton manufactures, from 100 to 123 millions. Explosives, however, as might be expected, show the most remarkable gain of any group. From an inappreciable amount prior to the war (6¼ millions in 1914) there occurred an increase to 41½ millions in the fiscal year 1915, to 467 millions in 1916, and during the first 11 months of the calendar year 1917 to a total of 757 millions. Gunpowder alone (excluding the equally important

FOREIGN TRADE

	Imports		Exports		Balance of Trade	
	1917	1916	1917	1916	1917	1916
January	$241,793,282	$184,350,942	$613,324,582	$330 036,410	$371,531,300	$145,685,468
February	199,479,996	193,935,117	467,648,406	401,783,974	268,168,410	207,848,857
March	270,257,139	213,589,785	553,985,699	410,742,034	283,728,560	197,152,249
April	253,935,966	218,236,397	529,927,815	398,568,532	275,991,849	180,332,135
May	280,727,164	229,188,957	550,063,934	474,803,637	269,336,770	245,614,680
June	306,622,939	245,795,438	573,653,117	464,685,956	267,030,178	218,890,518
July	225,926,352	182,722,938	372,758,414	444,713,964	146,832,062	261,991,026
August	267,854,767	199,316,480	489,997,171	510,167,438	222,142,404	310,850,958
September	236,196,898	164,038,614	455,997,947	514,924,134	219,801,049	350,885,520
October	221,239,405	178,658,730	543,232,000	492,813,918	321,992,595	314,155,188
November	220,533,575	176,967,749	488,240,626	516,167,324	267,707,051	339,199,575
December		204,834,188		523,233,786		518,399.598

item of guncotton, which, however, is not listed separately) is reported to have been exported to the extent of $375,000,000, an amount requiring approximately 900,000 bales of cotton or cotton linters for its manufacture. (See also XVIII, *Manufactures;* and XIX, *External Commerce.*)

Lastly, attention should be called to the fact that the increase in exports, and the same may be said to a lesser degree for imports, is attributable chiefly to an advance in prices and only partly to a gain in volume. Detailed tabulation of leading articles would indicate that between 60 to 70 per cent. of the increase in exports and imports is attributable to an increase in prices. Quoting the excellent summary of the *Commercial and Financial Chronicle* on this point:

> The average prices of very many articles have been very decidedly higher than those of the previous year. Gunpowder, already ruling very high in 1915-16, shows no mentionable change, but brass plates for the 10 months ended April 30 (later details are not available), averaged 30⅛c. per pound, against 25⅝c.; copper pigs, &c., 28.16c., against 21.28c.; cotton cloth, 10 1-5c. per yard, against 8.27c.; steel billets, &c., $68.90 per ton, against $40; steel rails, $42.80 per ton, against $32.48; structural steel, $65.83, against $42.48, and raw cotton, 17.7c., against 12.1c. Furthermore, other articles of iron and steel were considerably higher generally, as were wheat, corn, flour, coal, dynamite, leather, bacon, hams, mineral oil and sugar. The value of the exports of the articles enumerated (gunpowder not included) was, for the 10 months, July 1, 1916, to April 30, 1917, $2,015,668,251, against $1,282,095,366 for the like period of 1915-1916 or an increase of $733,728,885, and of this amount no less than $545,592,348 or 74⅝ per cent. is accounted for by the higher prices ruling in the latest year. . . .
>
> Higher prices also figure very prominently as an important factor in the augmentation in the value of imports. In fact it is a fair presumption that very much the greater part, if not all, of the gain over 1915-1916 is thus explainable. We reach that conclusion by analyzing the details for the ten months ended April 30. The advance in the price of wool, we find, accounts for 20 million dollars, in sugar 32 millions, copper and manufactures 26½ millions, fibers and manufactures 23 millions, hides and skins 49 millions, raw silk 30 millions, coffee 7½ millions, breadstuffs 6 millions, molasses and fruits and nuts each 5 millions, tin and flaxseed each 4½ millions, cotton and manufactures 16 millions, and dyewoods, fish, pig iron, lead, leather manufactures, manganese and paper, amounts varying from 1 to 3 millions. These items, which covered 1,213 millions of the 2,072 million imports for the 10 months, or 58½ per cent., furnished a value due to increased prices of 245 million dollars or 70 per cent. of the total gain for the period over the previous year. Consequently it seems safe to assume, with prices relatively high for most all of the other articles imported, that the whole gain this year over last was a matter of price. In other words, no more goods have been brought in, but we had to pay more for them.

BUILDING OPERATIONS

The 1917 figures of new building construction as judged by the permits issued for 20 leading cities, as compiled in Babson's "Desk Sheet", furnish a strong contrast with those of 1916, the total to date having declined to the lowest level in years. For the first ten months of 1917 such operations aggregated $355,002,937, as compared with $532,747,067 for 1916, a decline of approximately one-third. Even when compared with the very low returns for the corresponding years of 1914 and 1915 (417 and 419 millions), the returns for 1917 show a decline of approximately 15 per cent.

The *Commercial and Financial*

BUILDING CONSTRUCTION
(20 Leading Cities)

	1916	1917
January	$34,900,196	$34,310,911
February	32,039,903	32,416,653
March	54,938,059	49,480,222
April	56,271,635	47,638,876
May	67,326,185	38,694,360
June	63,612,337	36,762,555
July	87,947,719	33,973,575
August	39,292,235	29,005,502
September	40,111,681	29,199,780
October	56,307,117	23,520,503
November	42,499,280	24,747,221
December	44,190,468	16,980,052

Chronicle's compilation is even more extensive, since it covers 164 cities. For the month of September, 1917, the record shows a total of contemplated outlay of only $54,716,177, as compared with $71,518,277 for the same month in 1916, a decline of about 30 per cent. For all of the first nine months of the year the *Chronicle's* record shows the following:

> The aggregate for the period since Jan. 1 is very much less than a year ago. The disbursements arranged for at the identical 164 cities reach $582,785,917 as against 790 millions in 1916 and 625 millions in 1915. Greater New York's figures are 87 millions, 187⅞ millions and 134½ millions, respectively, in the three years, and for the other cities collectively the total is 495¾ millions, 602 millions and 492 millions. Twenty-three cities in New England exhibit a loss of 11 millions, and 41 places in the Middle Section (New York City excluded) show a falling off of 34¾ millions. The Middle West (28 cities) records a diminution in total of over 41 millions, of which 32 millions are at Chicago, but there is a nominal gain in the aggregate for 15 Pacific Coast points. The "Other Western" division, comprising 25 cities in the territory west of the Mississippi River, shows a loss of 17 millions, to which Minneapolis, St. Paul and Duluth were the principal contributors; at the South (31 cities) a decline of 2 1-3 millions is disclosed.

The reasons for the year's low returns are not far to seek. Shortage of labor, scarcity of building materials and the prevailing high level of prices in nearly all lines affecting construction have been the principal adverse influences. Other contributing causes to the present stagnation, however, have been the general desire to postpone operations in expectation of a substantial decline in the price of building materials, the congested condition of the railroads, which has necessitated embargoes and delayed haulage, and the great uncertainty as regards realty values. (See also XX, *Civil Engineering.*)

BUSINESS FAILURES

Solvency statistics, despite very high prices, the necessity of many industries to adjust themselves to war conditions, and numerous other unusual influences that have injected themselves into business since the definite entrance of the United States into the war, show an exceedingly satisfactory condition. In 1916 the total number of business failures, using Babson's average of the Dun and Bradstreet compilations, amounted to only 16,743, as compared with 20,600 for 1915, and the total liabilities of failures to only $181,846,338, as compared with $294,399,713. The first ten months of 1917 show an even more favorable situation. The total number of failures aggregates only 11,458, as compared with 12,940 for the corresponding period of 1916, a decrease of 11 per cent. Total liabilities for the ten months aggregate $147,871,845, as compared with $155,068,349 for the corresponding months of 1916, a decline of 6.1 per cent. A further analysis of the figures shows the favorable situation in solvency statistics to apply to all the main divisions of business activity, *viz.*, manufactures (see XVIII, *Manufactures*), commerce and finance. The excellent situation at present is well summarized by the *Commercial and Financial Chronicle* in the following statement:

> R. G. Dun & Co.'s compilations, the basis upon which our deductions and conclusions are founded, show that the number of failures in October this year was 1,082 for $12,812,012, this comparing with 1,240 and $10,775,654 a year ago, 1,599 and $25,522,380 in 1915 and 1,686 and $29,702,178 in 1914—the year the war broke out. We must go back eleven years to find a lesser number of disasters in October, but even then the debts amounted to $10,553,714. In manufacturing branches the reported indebtedness for the month at $6,076,970 is somewhat over 2 million dollars larger than in 1916. In the trading division liabilities of $5,267,817 compare with $5,486,200 in 1916. Failures among agents, brokers, etc., also exhibit a diminution in liabilities from last year.
>
> The record for the ten months is essentially satisfactory and especially

BUSINESS FAILURES
(Average of Dun and Bradstreet Reports)

	Liabilities		Number		Totals for Year	Liabilities	Number
	1916	1917	1916	1917			
January	$21,601,910	$22,296,421	1,904	1,549	1908	$259,341,727	14,873
February	15,406,194	14,502,383	1,649	1,146	1909	146,763,569	12,430
March	17,421,750	14,445,505	1,653	1,189	1910	195,223,045	12,109
April	15,743,073	11,965,288	1,383	1,083	1911	189,356,591	13,062
May	18,122,176	12,343,227	1,443	1,245	1912	202,085,974	14,647
June	10,197,618	14,872,802	1,245	1,113	1913	282,232,584	15,296
July	10,902,872	17,164,738	1,186	1,093	1914	358,391,742	17,526
August	17,913,121	15,772,940	1,349	1,074	1915	294,399,713	20,600
September	13,573,190	11,100,745	1,163	920	1916	181,555,903	16,747
October	11,174,445	13,065,656	1,253	1,045	1917	174,927,350	13,471
November	11,841,666	12,814,290	1,258	970			
December	14,945,903	14,741,215	1,301	1,043			

when considered in the light of the steady, and at some times rapid increase in the number of firms in business as the years pass. And the apparent tremendous profits offering in some lines the last two or three years has been conducive in that direction. The number of defaults for the period at 11,819 contrasts with 14,490 last year and shows a decrease from either 1915, 1914 or 1913, when the mercantile mortality stood at 18,887, 14,527 and 13,146 respectively. In the volume of debts, also, this year makes a very satisfactory showing, the aggregate at $154,762,050, comparing with $165,362,361 in 1916, and being fully 111 million dollars less than in 1915, and 147 millions under 1914. Manufacturing lines contributed liabilities of $65,768,212, against $63,016,823 in 1916 and $98,335,931 in 1915; trading indebtedness reached only $59,346,588, against $79,503,724 and $133,646,422 respectively, and the debts of agents, brokers, etc., covered $29,647,250 and $22,841,814 and $30,024,501 in the three years.

RAILROAD EARNINGS

Probably no business barometer so well indicates the huge volume of the nation's business during 1917 as the record of railway gross earnings. But, on the other hand, probably nothing indicates so well the disastrous effects of rising costs upon many of the nation's leading industries as the record of the net earnings. The *Commercial and Financial Chronicle's* classified compilation of gross and net earnings of 249,799 miles of road shows that gross earnings for the six months ending June 30, 1917, exceeded those for the corresponding months in 1916 by no less than $205,066,407, the total increasing from $1,741,329,277 to $1,946,395,684, or 11.78 per cent. Such a showing leaves little to be desired when we reflect that it follows the tremendous gain of $328,012,578, or 23.37 per cent. in the first half of 1916. In fact, the showing of 1917 would have reached even larger proportions had it not been for a number of unfavorable influences, such as the falling off of the western grain and southern cotton movement as compared with the preceding year, the shrinkage in iron-ore shipments from the Lake Superior region, the decline of 100 million bushels in the receipts of grain at the seaports, the material reduction in the movement of live stock, and the serious freight congestion and car shortage that has prevailed during nearly all of the year.

Large gross earnings, however, lose their apparent significance when we analyze the expense and net-earnings items. Here the *Chronicle's* compilation shows an augmentation in expenses for the first half of the year by the tremendous sum of $212,222,155 (18 per cent.), owing to higher wages and the greatly enhanced prices of practically all material and equipment entering into the operation of our railway systems. As a result, we have the anomaly of an increase of 205 million in the gross converted into a reduction in net earnings of $7,155,748, or 1.26 per cent. This disastrous effect of increasing expenses, despite a greatly increased volume of traffic, has become so accentuated as to suggest the adoption of radical methods of protecting the nation's transportation system (see XIX, *Railroads*). Earnings of 57 railroads, as reported by the Interstate Commerce Commission for October, showed total earnings of

RAILROAD GROSS AND NET EARNINGS

(*Commercial and Financial Chronicle*)

Section or Group	Gross Earnings			
	Jan. 1 to June 30		Increase(+) or Decrease(—)	
	1917	1916	Total	Per Cent.
Group 1 (18 roads), New England...	$86,595,862	$81,216,010	+$5,379,852	6.62
Group 2 (85 roads), East and Middle.	521,647,881	482,932,684	+38,715,197	8.05
Group 3 (61 roads), Middle West....	237,349,774	216,892,245	+20,457,529	9.43
Groups 4 and 5 (97 roads), Southern..	253,954,048	225,480,577	+28,473,471	12.62
Groups 6 and 7 (79 roads), Northwest	414,515,861	373,085,415	+41,430,446	11.10
Groups 8 and 9 (101 roads), Southwest	306,849,137	258,548,562	+48,300,575	18.69
Group 10 (49 roads), Pacific Coast...	125,483,121	103,173,784	+22,309,337	21.53
Total (490 roads)............	$1,946,395,684	$1,741,329,277	+$205,066,407	11.78

	Mileage		Net Earnings			
	1917	1916				
Group 1........	7,824	7,827	$21,318,813	$24,738,246	−$3,419,433	13.42
Group 2........	29,481	29,488	127,323,805	150,741,465	−23,417,660	15.41
Group 3........	23,456	23,458	56,132,434	68,314,061	−12,181,627	17.48
Groups 4 and 5..	42,046	41,828	81,824,821	79,543,832	+2,280,989	2.87
Groups 6 and 7..	69,094	68,910	125,811,364	127,163,673	−1,352,309	1.07
Groups 8 and 9..	58,774	58,763	94,791,479	74,156,447	+20,635,032	27.82
Group 10........	19,124	18,882	48,480,309	38,181,049	+10,299,260	26.97
Total......	249,799	249,156	$555,683,025	$562,838,773	−$7,155,748	1.26

$265,380,164, as compared with $236,258,915 for October, 1917, an increase of 12.3 per cent. Expenses, however, increased from $146,887,116 to $181,799,812, or 24 per cent., with the result that net earnings after the deduction of taxes declined from $79,513,834 to $67,502,039, or the remarkable amount of 18 per cent. Babson's compilation for 10 leading railway systems, representing every section of the country, shows gross earnings for the first nine months of 1917 to be 14.5 per cent. larger than for the corresponding months of the preceding year, following an increase of over 19 per cent. during the same period of 1916 as compared with the corresponding months of 1915. Net earnings for the first nine months, however, have remained practically the same as last year, whereas during 1916 they increased 31 per cent. over 1915.

It may be argued that the 1917 earnings are compared with exceedingly good results in 1916 as regards both gross and net earnings. But here it should be remembered that the gains of 23.37 per cent. in the gross and 42.26 per cent. in the net in 1916 do not represent new growth to the extent apparently indicated, but instead represent largely a recovery of severe losses in previous years. Again, hundreds of millions of dollars were invested by the railroads in previous years to provide additional equipment and better accommodations, and the large gains of 1916 must therefore be viewed from the standpoint of a greatly increased investment. It is this point of view that has made the present railway situation seem ominous, and has caused many to advocate increased rates and government aid in the form of loans in order to avoid a breakdown of our transportation system at this time of great need (see also XIX, *Railroads*). In its recent special report to Congress the Interstate Commerce Commission fully recognized the railroads' dilemma. The *Commercial and Financial Chronicle* concludes in its review of the first six months of the year:

> The situation, therefore, is that not only have net earnings been shrinking, but, as always happens, this has occurred when the carriers were obliged to earn a return on an enlarged investment. As far as the gross are concerned, the further gain in 1917 of $205,006,407, coming on top of the gain of $328,012,578 in the first half of 1916, making for the two years combined for this six months' period an improvement of considerably more than half a billion dollars, is a feature whose importance cannot be over-estimated. And yet, the fur-

NET SURPLUS OF IDLE CARS

	1915	1916	1917
Jan. 1....	[1]	46,955	*n* 62,247
Feb. 1....	279,411	21,485	*n* 109,988
Mar. 1....	321,747	*n* 20,551	*n* 130,082
April 1....	327,084	3,650	*n* 144,797
May 1....	291,303	33,361	*n* 148,627
June 1....	299,928	57,693	*n* 105,127
July 1....	275,636	52,234	*n* 77,682
Aug. 1....	265,364	9,762	*n* 33,776
Sept. 1....	185,009	*n* 19,873	*n* 34,605
Oct. 1....	78,299	*n* 60,697	*n* 70,380
Nov. 1....	26,239	*n* 114,908	*n* 140,012
Dec. 1....	38,199	*n* 105,527	*n* 117,132

[1] No report. *n* = net shortage.

ther fact that the additional gain recorded in 1917 has failed to be productive of additional net earnings is a circumstance fully as important, if not more important. Of what avail is it to the carrying industry if the volume of business keeps expanding, and yet no added profits come therefrom? That such should be the situation, no doubt, explains the great shrinkage in security values that has been going on.

The present immense volume of traffic is also indicated by the constant shortage in cars that has prevailed during all of 1917, as well as the last half of 1916. Instead of an average net surplus of 217,186 cars, as reported by the American Railway Association for the year 1915 (idle cars reached the large total of 327,084 on April 1, 1915), the net surplus for 1916 to Oct. 1 averaged only 12,368 cars, while for 1917 to Oct. 1 an average net shortage of 91,670 cars was reported. Every month of the year has shown a substantial shortage, despite all possible efforts to facilitate the rapid movement and unloading of cars.

BANK CLEARINGS

The account in the last issue of the Year Book (p. 331) showed a remarkable increase in 1916 in the bank clearings of the United States as a whole as well as for those of New York City. The clearings record of 1917 shows another tremendous increase and furnishes new high records both for New York City and for the rest of the nation, thus giving further proof of the extraordinary prosperity prevailing throughout the country. For the month of October the *Commercial and Financial Chronicle's* compilation shows total clearings of $28,255,130,000, as against $25,726,597,000 in October, 1916, an increase of 10.1 per cent., and a gain of 40 per cent. over October, 1915. Compared with the corresponding month in 1914, the increase reached 150 per cent. For the first ten months of the year clearings aggregated $253,180,384,000, as against the 1916 high record for the same months of $207,747,260,000. Thus far, therefore, the year 1917 presents a gain of 21.4 per cent. over 1916, while compared with 1915 and 1914 the gains amount, respectively, to 70.9 per cent. and 93.1 per cent.

The foregoing gain is well distributed throughout the year and is not confined mainly to New York City, as is often the case. Exclusive of New York City, clearings for October, 1917, totalled $12,531,736,000, a gain of 25 per cent. over the corresponding month of 1916, 69 per cent. over October, 1915, and 105 per cent. over October, 1914. For the week ending Nov. 10, as compared with the same week of 1916, gains were especially large at such important and widely distributed centers as Buffalo (increase of 28.4 per cent.), Seattle (60.7 per cent.), Portland (58.4 per cent.), Tacoma (86.7 per cent.), Kansas City (65.6 per cent.), Omaha (84.5 per cent.), Denver (49.1 per cent.), St. Louis (29.3 per cent.), Houston (43.3 per cent.), Atlanta (82.7 per cent.), and Savannah (59.0 per cent.). The largest gains are recorded for the West and South, while losses are already appearing in New England and the Eastern Middle states. Thus, for the week ending Nov. 10, total clearings for the Middle West showed an increase of nine per cent., as compared with the corresponding week of 1916, for the Pacific Coast states, an increase of 27.4 per cent., for the other Western states, 49.6 per cent.; and for the South, 33.7 per cent. In New England, however, the clearings for this week showed a decline of 2.8 per cent., and in the Middle Eastern states, of 10.8 per cent.

For the first ten months of the year, clearings, exclusive of New York City, totaled $105,223,000,000, a gain of 30 per cent. over 1916 and of approximately 74 per cent. over 1915 and 1914. While bank clearings, ex-

BANK CLEARINGS

	Bank Clearings Outside of New York		Total Bank Clearings	
	1916	1917	1916	1917
January	$7,811,885,000	$10,514,140,000	$20,138,688,000	$25,641,505,000
February	7,185,968,000	8,836,686,000	18,292,705,000	21,630,773,000
March	8,196,369,000	10,565,538,000	20,744,244,000	24,794,665,000
April	7,753,011,000	10,361,026,000	19,375,628,000	25,013,248,000
May	8,159,112,000	10,734,349,000	20,720,040,000	26,317,806,000
June	8,100,486,000	10,636,909,000	20,653,997,000	26,735,988,000
July	7,987,688,000	10,480,566,000	19,426,431,000	25,665,860,000
August	8,046,711,000	10,416,272,000	19,814,028,000	25,095,594,000
September	8,498,961,000	10,145,914,000	22,854,902,000	24,029,815,000
October	10,015,401,000	12,535,211,000	25,726,597,000	28,258,604,000
November	10,161,439,000	12,391,781,000	26,814,814,000	27,225,956,000
December	10,358,094,000	11,917,006,000	27,293,701,000	20,530,549,000

clusive of New York City, probably constitute the best single barometer of general business conditions, it is only fair to note that such clearings are materially affected by rising commodity prices. This rise, based on Bradstreet's index number, has been approximately 41 per cent. during the year. Hence the foregoing increase in clearings must be viewed with this factor in mind. The later discussion of index numbers (see *infra*) will serve to show, as it did in the account for 1916 (p. 341), that the unprecedented rise in the price level of practically all commodities during the last two years has greatly increased the volume of checks cleared.

At New York City bank clearings amounted to 148 billions for the first ten months of the year, or nearly 1⅓ times the total clearings for the remainder of the country. This amount represents an increase of only 17.4 per cent. over the corresponding period of 1916. It is also noteworthy that the gain over 1916 became gradually less as the year progressed. For October, 1917, New York clearings totaled 15.7 billions or a total almost the same as for October, 1916, while for the week ending Nov. 10 they actually showed a decline of 13.7 per cent. as compared with the corresponding week of 1916. The reasons for this tendency are not far to seek, and they emphasize the importance of considering New York City separately when interpreting the nation's bank clearings. New York City is the great stock, bond and produce market center of the country, and the huge volume of transactions in these markets greatly swells the total of bank clearings. Hence, great fluctuations in clearings are apt to occur, depending on the activity or stagnation and the price level prevailing in the speculative markets. As will be indicated later, not only have stock and bond transactions shown a tendency to contract in volume, but the price level of securities has undergone an unprecedented shrinkage. Produce and cotton prices, it is true, have advanced tremendously, but any gain in this direction has been much more than balanced by the decrease in the price level as well as the volume of transactions in the security market. It is only New York's great importance as an export and banking center, particularly at this time, that has prevented a greater relative decline in the city's clearings.

THE SECURITY MARKET

General Conditions.—In comparison with the extremely favorable records furnished by most other leading business barometers, the security market of 1917 presents a remarkable contrast. In the midst of record-breaking business, the stock and bond market has experienced the greatest decline in a generation. Liquidation has been constant, and at times violent, throughout the year, until at the beginning of December stocks show a shrinkage of fully 25 per cent. since the first of the year, and investment bonds a shrinkage of approximately 13 per cent. Such rallies as have occurred have been small and short in duration, and one wave of selling after another has occupied the attention of the financial community. Many of the nation's standard investment stocks have reached the lowest prices on record and clearly indicate that the market has discounted a substantial cut in dividends. The stock-market record is a gloomy one indeed, when we reflect, first, that the shrinkage in prices has been such as to wipe out billions in the value of loanable collateral, and, second, that the essential function of organized exchange markets, aside from furnishing a convenient market place, is to discount future business conditions. To those who realize that major market movements precede the realization of future business conditions, the tremendous decline in security quotations is significant of great impending changes of an unfavorable character.

Numerous unfavorable factors of a character to disturb the confidence of investors have filled the pages of the press, and collectively these have constituted a powerful force to bring about the constant and copious outpouring of stocks. As regards many corporations, particularly railroads and all kinds of public-service corporations, the increase in the prices of labor, materials and equipment has been so tremendous as to convert record-breaking gross earnings into losses as far as net earnings are concerned, and the prospects for an early change in this respect, judging from current news, seem remote. Unquestionably, also, the market has been seriously affected by the Government's financing of huge bond issues. Not only did our market during 1915 and 1916 float large bond issues of foreign Governments and absorb several billions of American securities held abroad, but on top of this our own Government is raising billions through bonds and taxation (see XIII, *Public Finance*). A large portion of the funds thus raised come from the proceeds of sales of other securities. Moreover, the Government must of necessity encourage the flow of capital into those lines of industry that are essential to the winning of the war. As a consequence, new incorporations of war industries, as will be pointed out later, have shown a tremendous increase, while many other corporations much in need of financial assistance to meet immediate requirements are unable to secure capital except at prohibitive prices. Besides this readjustment in business occasioned by war requirements, the banks are more and more obliged to pursue a policy of contracting loans along those lines of business activity least essential to the Government. To these factors may also be added the further fact that the borrowing power of the speculative community is greatly reduced through the depreciation of billions in the value of loanable collateral. Rumors also have been constantly current to the effect that foreign holders of American securities have continued to use our market as a dumping ground for a very wide range of securities.

But when all is said, it is difficult to avoid the belief that the security market of 1917 was largely conditioned, like the market of the preceding two years, upon the probable duration of the war, and all indications which have come to the surface thus far indicate a prolongation of the struggle. In this respect it is to be noted that circumstances have apparently caused a change in the point of view. The rapid speculative rise of 1915 and 1916 was predicated upon the purchase of unlimited quantities of war materials and other supplies at spectacularly profitable prices. Hence, the prolongation of the war meant a continuation of immense business at fabulous profits. But when the United States entered into the war it became apparent that a decided change in this respect would soon follow. Increased industrial activity was bound to continue. But it was also apparent that many industries would suffer unless they could adjust themselves so as to undertake a part of the war work. Again, even as regards so-called war industries, it became obvious that a large volume of business would no longer mean the same large profits. Through a broad system of price fixing (see *infra*) and excess-profits taxation (see XIII, *Public Finance*), especially when viewed in the light of other factors already mentioned, the cream of war business would be lost. Hence, the prospects of a pro-

SECURITY MARKET TRANSACTIONS AND PRICES
(New York Stock Exchange)

	TOTAL TRANSACTIONS				AVERAGE SECURITY PRICES			
	Shares of Stock		Bond Sales		10 Leading Stocks		10 Leading Bonds	
	1916	1917	1916	1917	1916	1917	1916	1917
January ...	15,956,944	16,939,440	$118,024,500	$124,612,000	143.3	137.9	91.8	93.9
February ..	12,126,205	13,588,465	85,355,000	76,087,000	138.3	132.4	91.8	92.6
March	15,197,585	18,658,267	81,638,000	75,344,000	138.0	133.9	91.6	92.0
April	12,523,507	14,258,162	79,384,250	96,778,000	136.6	131.2	91.4	90.3
May	16,527,576	19,354,400	98,569,000	77,223,500	138.6	125.6	91.5	88.0
June	12,823,833	19,092,653	84,786,500	58,203,700	140.5	123.1	92.3	87.3
July	9,187,868	13,325,365	67,823,500	63,866,500	139.7	121.2	92.0	87.1
August	14,626,082	11,636,853	84,934,000	68,579,000	139.2	123.1	91.9	86.4
September.	29,992,582	13,822,775	97,145,500	85,201,500	140.6	118.6	91.8	85.0
October ...	28,161,277	17,368,787	133,970,500	121,057,000	143.9	113.4.	93.4	84.0
November	34,552,860	14,816,058	122,426,000	98,124,000	142.0	109.9	93.9	81.8
December .	31,735,674	12,767,723	95,795,000	112,167,000	137.5	107.6	93.8	79.6
Total, 1910	$164,150,061							
1911	127,207,258							
1912	131,128,415							
1913	83,470,693							
1914	47,900,568							
1915	173,145,203							
1916	233,311,993							
1917	185,628,948							

longed war apparently no longer show the silver lining that was the case prior to the participation of the United States as an active belligerent. Moreover, the industrial world is realizing more and more that prosperity cannot emanate permanently from the destruction of our national wealth, hence again the less rosy view associated with a prolongation of the war.

Volume of Stock Transactions.—As was the case in 1916, the volume of stock-market transactions was enormous during the year. Unlike the preceding two years, however, there was a complete absence of the speculative craze to buy anything and everything that was labeled "war stock". Instead, the large trading of 1917 took place on declining prices, the heaviest daily transactions usually occurring at the bottom of a wave of selling. In fact, the large volume of transactions of the year is indicative of the force of the bear market that has prevailed. So great was this force and so inopportune in view of the nation's immediate requirements, that the New York Stock Exchange saw fit to curb the operations of short sellers (see *The Conduct of Business, infra*).

For the first ten months of the year shares traded on the New York Stock Exchange totaled 158,045,167, a decline of only six per cent. as compared with the immense transactions for the corresponding period of 1916. The total is noteworthy when compared with 141,812,201 shares for the same period in 1915, 45,990,575 in 1914, and 72,553,020 in 1913. With the exception of August, when transactions amounted to 11,636,853 shares, every month of the year shows a total in excess of 13,000,000 shares. In 1915 and 1916 it was noteworthy, as indicating the direction of speculative activity, that many stocks which formerly played only a relatively minor part in the volume of transactions on the New York Stock Exchange suddenly became very prominent. Sales of the same stocks, it may be added, continued large during 1917, except that the sales occurred on declining instead of rising quotations.

Stock Prices.—The extent of the abnormal shrinkage in stock quotations may be illustrated by Babson's composite quotations. As regards his list of 10 representative railroad stocks, the average price declined during the first 11 months of 1917 from 137.9 (average for January) to 107.1 (average for November), or 22.3 per cent. Compared with October, 1916, when the average for the month was 143.9, the decline amounted to 25.5 per cent., a remarkable shrinkage in the short space of 14 months. The price of 107.1 compares with 143.3 in January, 1916, 133.0 in January, 1915, 159.8 in January, 1913, and 174.8 in January, 1910. It may be added that public-service stocks of all kinds have shown a similar depreciation. In all these cases the primary cause has no doubt been the tremendous increase in the cost of all that is needed for operating, while at the same time the corporations find it impossible, owing chiefly to public regulation, to increase the price of their services.

Taking Babson's composite price for 40 stocks, including 20 representative industrials and 20 representative railroads, it appears that the average price declined during the first 11 months of the year from 100.46 (average for January) to 72.87 (average for November), or 27.4 per cent. Compared with October, 1916, when the average for the month was 106.67, the decline amounts to 31.7 per cent., again a remarkable shrinkage in 14 months. The price of 72.87 compares with 99.30 in January, 1916, 74.71 in January, 1915, 91.99 in January, 1913, and 98.23 in January, 1910.

Again, taking Babson's composite price for 20 representative copper stocks, we find that the average price declined during the first 11 months of the year from 53.6 (average for January) to 37.8 (average for November), or 29.4 per cent. Compared with November of 1916 when the average price for the month was 62.2, the decline amounts to 40 per cent., a truly sensational depreciation within one year. The price of 37.8 compares with 53.3 in January, 1916, 34.1 in January, 1915, 43.0 in January, 1913, and 53.5 in January, 1910. Attention may also be called to Babson's summary as furnished in his barometer letter of Nov. 20 last:

> The recent declines in the market have carried stocks to record lows. The 20 railroads sold down to 74, which is 13 points lower than they stood at the closing of the Stock Exchange in 1914, and 10 points lower than their lowest point in 1907. The 20 industrials dropped to 68, only 13 points above 1914 closing prices and 31 above their 1907 low. Twenty copper stocks recently dropped to 36, which is 6 points above their 1914 closing prices and 8 above the 1907 low.

Prices of War Stocks.—The YEAR BOOK for 1915 (p. 337) and for 1916 (p. 335) called special attention to the extraordinary rise in the price level of the so-called "war stocks". These stocks again deserve mention, because their decline during 1917 has been almost as abrupt as their rise during the preceding two years. The movement of prices of this class of stocks is indicated by the accompanying table of 26 leading corporations that have figured largely in the press accounts of war orders. Summarizing the table, it appears that on July 30, 1914, the date of commencement of the war, one share in each of these corporations could have been purchased at a total cost of $1,007. At the highest prices of 1915 these same shares represented an aggregate price of $3,522, an appreciation of nearly 250 per cent., while at the high prices of 1916 ($4,083) the appreciation reached 305 per cent. By Dec. 1, 1917, however, the price had again declined to $1,442, thus showing an average appreciation of only 43 per cent. over the prices prevailing on July 30, 1914, and a decline of nearly 65 per cent. as compared with the high prices in 1916. While the increasing cost of labor and materials has undoubtedly played an important part, it is this particular group of stocks that is most vitally affected by the Government's policy of price fixing and excess-profits taxation.

Bond Sales.—During the first 10 months of 1917 bond sales on the New York Stock Exchange aggregated $846,952,200, as compared with $931,630,950 during the corresponding period in 1916, $709,464,700 in 1915, and $424,280,020 in 1913. Although the sales of the present year show a decline of nine per cent. as compared with 1916, they nevertheless represent an increase of 19.4 per cent. over 1915 and amount to nearly twice the sales of 1913. The large sales of bonds during the last two years are apt to be misleading, however, unless account is taken of the fact that during both years trading in the numerous and large war issues of Great Britain, France and the United States constituted a very large proportion of the total. A very considerable

WAR STOCKS

	July 30, 1914	High, 1915	High Since Jan. 1, 1916	Sept. 8, 1916	Nov. 3, 1916	Dec. 1, 1917
Allis-Chalmers	7¼	49½	38	23¾	28½	18¼
American Can	22⅞	68½	68½	64⅝	64⅝	35⅜
American Car & Foundry	46¼	98	78½	63⅞	71⅞	65½
American Locomotive	23	74¾	98¼	78¼	92½	53
American Steel Foundry	27½	74½	73	56	64½	55⅞
American Woolen Co	12	56	58⅞	46½	53	43
American Zinc, Lead & Smelt	12¾	71½	97⅞	38	55½	13½
Baldwin Locomotive	42	154½	118⅝	82½	87	55¼
Bethlehem Steel	33¾	600	700	492	678	79½
Crucible Steel	14½	109⅞	99½	83⅞	94	54¼
Distillers' Securities	12½	50½	54½	45½	46½	34½
Electric Storage Battery	47	60	72¼	66½	70½	49½
General Electric	140¾	185½	187¼	171½	183¾	130½
General Motors	78	558	50	580	814	89¾
International Mercantile Marine	2¼	20½	50⅞	49⅝	41⅝	24⅜
Lackawanna Steel	30	94¾	107	80½	89⅞	80¾
New York Air Brake	60	164¾	186	138	158½	109
National Lead	41¾	70¾	74⅝	64½	69	43½
Pressed Steel Car	38½	78¼	88¼	55	75⅛	54
Studebaker	28	195	167	124½	129¾	45⅞
Tennessee Copper	29	70	66½	26⅞	23⅛	12½
United States Industrial Alcohol	20	131¾	170½	114	143¼	111
United States Steel, Common	55½	89½	129¾	100¾	120⅞	92⅛
Virginia-Carolina Chem. Co.	24⅛	52	51	42⅝	46⅝	33
Westinghouse Elec. & Mfg. Co.	73⅜	74⅞	71⅝	61⅜	67½	38½
Willys-Overland	85	268	325	46¼	42¾	19¾
Total	1,007	3,522	4,083	2,801	3,407	1,442

part of the increased dealing in corporation bonds at various times of the year 1917 occurred in anticipation of our Government's two Liberty loan issues.

Unlike the experience of 1916, the price level of representative bonds shows an unprecedented decline during 1917. During 1916, according to Babson's average price of 10 leading and representative bonds, the change in the price level was almost inappreciable, the average for January being 91.8, and that for December, 92.0. According to the same average the decline in representative bonds during the first 10 months of 1917 was both rapid and continuous, each month showing a decline as compared with the preceding. Beginning the year with an average price for January of 93.9, these bonds show successive monthly average declines to 81.8 for November, a total decline in 11 months of nearly 13 per cent. Such a decline in high-grade bonds within so short a time has not been witnessed for years, and it should be added that low-yielding bonds showed the most spectacular downward tendency. The reasons for this decline are similar to those presented in the last issue (*A. Y. B.*, 1916, p. 337). There it was stated that

> the rapidly increasing cost of living, the rising tendency of long-term money rates, the general feeling that interest rates, as a consequence of the war, are apt to be materially higher for years to come, and the flotation of large foreign and domestic war issues in this country on an attractive interest basis with the prospect of further issues, all constitute in their combined effect a powerful deterrent to any improvement in bond issues yielding only a moderate rate of interest and having a number of years to run before maturity. No doubt, also, our market was obliged to absorb a large volume of American bonds held abroad.

Attention was also called to the fact that many bondholders were tempted to invest in foreign securities owing to their low price and the favorable rates of exchange, or in the shares of industrial companies participating heavily in the execution of war orders. Here, however, it is likely that a decided change has occurred during 1917. Not only has the stock market, as already indicated, experienced a tremendous decline, but many of the leading foreign-Government issues floated within the

United States during the past few years have suffered a shrinkage in price to such an extent as to sell at present on an eight to 16 per cent. interest basis.

New Securities Listed.—Listing of stocks and bonds on the New York Stock Exchange during 1917 occurred on a very much larger scale than during the preceding year. For the first 10 months of the year such listings totaled $2,299,272,429, as compared with 1,397 millions for the corresponding months of 1916, 762 millions for 1915, and 883 millions for 1914. In fact, listings on the Stock Exchange for the first 10 months of 1917 exceed the total for all of 1916 by 307 million. Expressed in percentages of increase, the listings of the first 10 months of 1917 exceed those for the corresponding period of 1916 by nearly 66 per cent., those of 1915 by over 201 per cent., and those of 1914 by over 106 per cent. Assuming even that the present low rate of listing (August-October inclusive) should continue for the rest of the year, 1917 will nevertheless bid fair to equal 1909, when listings reached the unusually high figure of 2,439 millions.

LISTINGS OF NEW SECURITIES

	1916	1917
January	$29,613,700	$418,341,125
February	522,614,700[1]	217,427,125
March	148,988,775	297,792,275
April	73,720,400	317,800,275
May	34,819,000	209,175,000
June	173,258,600	223,040,250
July	59,767,100	486,985,800
August	121,690,900	22,502,779
September	143,827,800	24,000,000
October	89,531,450	82,207,800
November	161,234,150	3,788,200
December	432,668,500	21,286,600

Total,	1909	$2,439,656,870
	1910	1,678,147,570
	1911	1,329,616,345
	1912	1,786,986,170
	1913	968,738,315
	1914	964,157,200
	1915	1,172,078,320
	1916	1,991,735,075
	1917	2,324,347,229

[1] Including $500,000,000 Anglo-French Bonds.

The foregoing figures, however, in order not to be misunderstood, should be viewed with reference to the rate of listing during the last three months of the 10-month period under consideration. While the addition of new securities to the Stock Exchange list was high during each of the first seven months, an abrupt and most unusual decline occurred during August, September and October, the totals for August and September declining to the very unusual figures of 22½ and 24 millions, respectively. For this three-month period aggregate listings amounted to only 129 millions, compared with 355 millions during the corresponding period of 1916, a decline of 63 per cent. This sudden reversal from unusually high to extremely low listings is traceable mainly to the general curtailment of corporate financing caused by the flotation of huge government issues.

INCORPORATIONS

With the entrance of the United States into the war great impetus was given to the creation of many new corporations in war industries. The increase in the flow of available funds into the numerous lines helping to conduct the war has been truly phenomenal and as yet shows no sign of subsiding. New incorporations with authorized capital of $1,000,000 or over in the eastern states are reported as aggregating $3,221,303,700 during the first 10 months of 1917, as compared with $2,272,078,500 for the corresponding period of 1916, only $1,101,067,100 for 1915, and $707,847,500 for 1914. The extraordinary total of 1917 becomes apparent when we realize that it amounts to 1.4 times that of 1915 and 4.5 times that of 1914.

In the case of new securities issued by existing corporations, however, the showing is quite different. Here it is clear that government financing is rapidly restricting the available supply of capital for corporations, particularly for those not engaged in war work. While the Government has not yet taken steps openly to conserve the supply of investment capital, as has been done in other belligerent countries, there is every reason to believe that applications for new capital will soon be greatly restricted for many industries, with a view to forcing the flow of all available funds into channels connected with war

INCORPORATIONS OF $1,000,000 AND OVER

	1917	1916	1915	1914
January	$244,450,000	$270,995,000	$51,150,000	$120,050,000
February	283,815,000	365,995,300	53,950,000	51,575,000
March	281,000,000	194,750,000	70,050,000	57,700,000
April	361,510,000	166,650,000	32,200,000	136,185,000
May	388,481,000	209,735,000	78,950,000	62,700,000
June	352,584,000	264,350,000	181,247,100	70,050,000
July	416,350,000	217,662,500	71,100,000	68,700,000
August	382,100,000	113,472,000	67,100,000	50,600,000
September	202,500,000	164,700,000	286,625,000	54,800,000
October	308,513,700	303,768,700	208,695,000	35,487,500
November	285,590,000	260,407,800	190,075,000	81,650,000
December	186,350,000	230,850,000	135,125,000	105,450,000
Total	$3,693,243,700	$2,763,336,300	$1,426,267,100	$894,947,500

manufacturing industries, a factor which will still further reduce the volume of new corporate issues. For the first 10 months of 1917 new securities issued by existing corporations totalled only $1,397,912,800, as compared with $1,823,786,200 for the corresponding period of 1916, $1,094,904,700 in 1915, and $1,326,141,400 in 1914. It thus appears that while the total for 1917 represents a decline of over 23 per cent., as compared with 1916, it nevertheless exceeds that of 1915 by nearly 30 per cent., and approximately equals the showing of 1914. Despite the decline, as just indicated, the showing of 1917 is nevertheless remarkable when we reflect that since the beginning of the war we have loaned between 1½ to two billions to foreign borrowers directly, have reduced our indebtedness abroad by about 2½ to three billions through the repurchase of American securities held in foreign countries, and have floated domestic loans of approximately eight billions.

THE MONEY MARKET

Similar to the experience of 1916, money-market conditions during the whole of 1917 were the opposite of what might have been expected during a period of great business prosperity, loan expansion and government financing. In fact, the phenomenon of the low money rates of the past two years is contrary to all former precedents. At the beginning of December, after two years of record-breaking business and high prices, call loans in New York averaged only four per cent. for November, while time loans at no time during the year reached a monthly average of six per cent. The causes of the low rates of 1916 were discussed in detail in the last issue (p. 339), and the continuing low rates in 1917, particularly demand rates, are probably traceable in the main to the heavy liquidation in the security market, the desire of banking interests to keep a large portion of their funds liquid, and the operations of the new Federal reserve system (see also XIII, *Banking and Currency*). Certain it is that the Government, in the interest of future Liberty-loan issues, is also exerting itself to the utmost to keep money rates at a reasonable level.

At the beginning of the year the January average rate on prime commercial paper was 3½ per cent. and the rate on call loans two per cent. Subsequently, there was a gradual increase in both rates, until in November the rate on prime commercial paper averaged 5½ per cent. and the rate on call loans four per cent. At the same time in 1917 the corresponding rates were 3½ per cent. and 2⅞ per cent. It is thus apparent, as indicated by the accompanying table, that there has been a gradual and considerable increase in money rates, yet the advance has not been such as would be warranted by the present unusual demands of business, as well as the Government, for all available capital. It should be noted, however, that much capital tied up in securities at the unusually high prices of 1915 and 1916 has been released through drastic liquidation in the security market (see *supra*). Moreover, municipal and corporate financing of new issues has declined to a

MONEY MARKET CONDITIONS

	Loans, Deposits and Reserves of New York Clearing House Banks					
	Loans (000 omitted)		Deposits (000 omitted)		Surplus Reserves (000 omitted)	
	1916	1917	1916	1917	1916	1917
January	$2,264,788	$2,360,816	$2,469,470	$2,538,631	$143,435,675	$154,692,348
February	2,283,534	2,407,199	2,488,363	2,587,792	143,980,405	149,449,802
March	2,292,207	2,466,977	2,468,672	2,637,360	123,044,232	124,498,768
April	2,313,325	2,526,256	2,460,541	2,690,613	99,444,208	111,883,715
May	2,285,689	2,490,282	2,394,899	2,568,333	81,061,405	96,923,843
June	2,244,948	2,651,701	2,333,490	2,547,780	80,129,680	58,937,160
July	2,161,749	2,684,303	2,230,040	2,579,223	84,150,955	126,746,478
August	2,175,949	2,693,116	2,267,685	2,602,342	107,324,348	92,985,574
September	2,267,367	2,753,662	2,352,761	2,573,764	82,541,653	64,961,492
October	2,295,565	3,309,681	2,381,409	2,980,770	81,359,810	84,334,415
November	2,353,621	4,417,579	2,446,935	3,393,215	79,651,654	88,531,452
December	2,287,933	4,376,146	2,350,686	3,485,327	76,278,725	104,455,545

	Money Rates						Gold Movements (Excess of Imports)	
	New York Monthly Average				Average Bank Rates, England, France and Germany			
	1916		1917					
	Time	Call	Time	Call	1916	1917	1916	1917
January	3⅛	1⅞	3½	2	5	5⅙	$4,794,715	$38,206,360
February	3	1¾	4⅓	2½	5	5⅙	+7,668,661	81,698,436
March	3⅛	2	4½	2¼	5	5⅙	+997,915	121,578,989
April	3¼	2⅛	4½	2⅖	5	5	+5,381,211	15,407,245
May	3¼	2¼	4⅝	2⅜	5	5	15,403,346	+5,435,329
June	3⅞	2⅞	5⅛	4⅞	5	5	114,422,716	+24,174,783
July	4⅛	3⅛	4⅗	3⅝	5⅓	5	52,712,630	+41,748,559
August	3¾	2¼	5	3	5⅓	5	29,458,587	+27,357,136
September	3⅝	2⅚	5⅜	4⅞	5⅓	5	85,713,106	+27,160,861
October	3⅝	2⅗	5⅝	4	5⅓	5	90,455,191	+7,004,492
November	3½	2⅖	5½	4	5⅓	5	20,637,841	+4,316,684
December	4	4⅓	5⅝	5¼	5⅓	5	130,646,962	

+ = excess of exports.

very low level in order to give the Government the right of way in meeting its demands for funds.

The most noticeable tendency in the banking situation has been the tremendous increase in loans. Examination of the accompanying table will show that between January and November of 1917 loans of the New York Clearing House banks, exclusive of the trust companies, rose from $2,360,816,000 (average for January) to $4,442,020,000 (average for November), an increase of over 88 per cent. With the single exception of May, every month shows a material increase, and during the later months the rate of gain was an increasing one. Deposits, on the other hand, increased during the same period from $2,538,631,000 to $3,467,314,000, or only 36 per cent. Judging from the past, an excess of loans over deposits has usually been regarded as an unwelcome sign in the credit situation. Now it appears, after a long period of most drastic liquidation in the stock and bond market, that loans of the New York Clearing House banks exceed the deposits by the remarkable amount of $975,000,000, or 28 per cent., and that loans have increased at a rate twice as fast as deposits. In the meantime the surplus reserves of these banks have declined from an average of $154,692,348 in January of 1917 to $82,158,680 in November. In fact, during September the reserve averaged only $64,961,492. It is well to bear in mind, however, that the reserves of the New York Clearing House banks (total reserve requirements reduced from 18 per cent. to 13 per cent. of net deposits by the amended Federal Reserve Act); (see XIII, *Banking and Currency*), so frequently characterized in the press during 1916 and 1917 as entirely adequate, would have been entirely different, in fact, would at various times during the year have shown a large deficit under the old reserve requirement of 25 per cent.

PRICES AND COST OF LIVING

During all of 1917 the consumer has been confronted by the same constant and material rise in the price of necessaries that occurred during the preceding year. In fact, every month of 1917 shows a substantial advance in the general price level over the preceding month. So rapid and general has been the upward movement, coming as it does on top of a material rise during the years 1916 and 1915, that the phenomenon has been the subject of endless comment in the news and financial press. Labor organizations, as well as the leading public utilities of the country, all point to our standard index numbers as a justification for increases in the price of their services. The extent of the rise is brought home to all when we consider present prices of standard commodities fundamental to our business life as indicated in preceding pages of this review.

For the month of November Bradstreet's index number averaged 17.0710, as compared with 16.0680 in July and 13.7277 in January, and with 10.9163 in January, 1916, 9.1431 in January, 1915, 8.8857 in January, 1914, and 8.29 in January, 1908. For the first 11 months of 1917 Bradstreet's index number averaged 15.4604, as compared with 11.6562 for the corresponding period in 1916, and 9.7809 in 1915. The average figure for the first 11 months of 1917 represents an increase of 41 per cent. over the corresponding period of 1916 (11.6562), of 58 per cent. over the average for 1915 (9.7809), and nearly 72 per cent. over the average for 1914.

The London *Economist's* number shows an even greater increase in English prices. For the month of November, 1917, this number averaged 5,701, as compared with 5,646 in July and 4,908 in January, and with 3,634 in January, 1916, 2,800 in January, 1915, 2,623 in January, 1914, and 2,310 in January, 1908. For the first 10 months of 1917 this number averaged 5,395, as compared with 4,164 for the corresponding period in 1916, 3,222 in 1915, and 2,622 in 1914. The November average figure of 1917 (5,701) represents an increase of 24 per cent. over the figure for the same month of 1916 (4,596), of 69 per cent. over the average figure for 1915 (3,371), and 147 per cent. over the average figure for 1909 (2,306). Gibson's index number, likewise, averaged 119.9 for November, 1917, as compared with 116.4 for July and 87.4 for January, 1917, and with 74.8 for January, 1916, 64.0 for 1915, 60.8 for 1914, and 54.2 for 1908. (See also XV, *Labor.*)

INDEX NUMBERS

YEAR	Bradstreet's	London *Economist*	Gibson's
1901	7.57	1948	44.5
1902	7.88	2003	53.5
1903	7.94	2197	49.0
1904	7.92	2136	48.3
1905	8.09	2342	47.3
1906	8.41	2361	49.8
1907	8.90	2508	50.9
1908	8.00	2223	54.2
1909	8.51	2231	59.2
1910	8.98	2407	59.3
1911	8.7129	2542	56.9
1912	9.1867	2699	62.6
1913	9.2115	2704	58.1
1914	8.9985	2643	60.8
1915	9.8531	3244	64.0
1916	11.8250	4216	74.8
1917:			
January	13.7277	4908	87.4
February	13.9427	4953	90.5
March	14.1360	5072	96.4
April	14.5769	5300	109.2
May	15.1203	5379	118.5
June	15.4680	5412	114.2
July	16.0680	5646	116.4
August	16.3985	5579	117.9
September	16.6441	5658	119.4
October	16.9117	5634	120.1
November	17.0710	5701	119.9
December	17.8113	5768	121.4

The causes that have combined to bring about the foregoing phenomenal increase in prices are the same as those described in the last issue (1916, pp. 341-42), namely, an unfavorable crop situation in certain lines, a decline in the food-producing and manufacturing power of many of the belligerent nations and, as a result, an unprecedented foreign demand, a scarcity of labor, together with a large increase in wages, an inability to effect a prompt distribution of products owing to an overburdened transportation system, and a general tendency to inflation brought about by abnormal extension of credits. Considerable weight must also be assigned to a tendency towards profiteering on the one hand, and, on the other, the tendency of many consumers to forestall the possibility of a later scarcity by buying much larger stocks than is necessary to meet immediate reasonable needs. There is reason to believe that the rise in prices would have been even greater than is actually the case had the Government not intervened with its policy of regulating or fixing prices along many lines and in supervising the order of shipment of many necessary commodities.

THE CONDUCT OF BUSINESS

Government Price Fixing.—Beyond question the most far-reaching change in our business life during the year has been the Government's assumption of control over the price and distribution of certain vital necessaries of life. Although the legislation (see I, *The Sixty-fifth Congress*) grants such control for the duration of the war, the conviction is already quite general that at least some of the numerous applications of this control are likely to become, either in whole or in part, a permanent feature of our future economic life. Certain it is that the new departure in business control constitutes an experiment for a nation that has long been known for its individualism. The usual operation of supply and demand in our markets is now to be superseded during the duration of the war by a central control which is given the power to act in accordance with the exigencies of the situation. In brief, the objects of the change are to enable the Government or the public to purchase at prices lower than those established by market conditions, to substitute for the ordinary system of distribution by price a method of distribution based on the country's requirements for the successful prosecution of the war, and to prevent certain classes from making abnormal profits out of the war at the expense of labor and the consuming public.

Space limits forbid a detailed explanation of all the numerous ways in which this control has already been exercised, and current press reports clearly indicate that we have only seen the beginning. Price fixing began with certain agricultural commodities, especially wheat and hogs, and here a minimum price was established with a view to overcoming the severe shortage by encouraging production. On the other hand, the consumer had also to be protected against the acts of middlemen, and the business of food conservation had to be given the widest possible extension through "conservation campaigns". Thus, we find that the basic price to be paid by the U. S. Food Administration to Cuban planters for the sugar crop of 1917 was fixed by agreement between the International Sugar Committee and a Cuban commission appointed by the President of Cuba, the actual price to be paid at New York, however, depending on the rate of freight, to be determined by the U. S. Shipping Board. At the request of the Food Administration, the War Trade Board also ruled, in order to stop speculation in condensed and other forms of preserved milk, that no exports of these products would be licensed unless the manufacturer certified that the product was sold direct for export purposes and that the purchase price of the raw milk would not exceed the price paid by other buyers in the territory in which the manufacturing plant is located.

To check hoarding and speculation in cotton seed and cotton-seed products, special regulations were issued by the Food Administration governing ginners, seed buyers, merchants, crushers and refiners, all of whom are being placed under license. For the same purpose an agreement was entered into with the butter and egg exchanges throughout the country to the effect that all speculation in butter and eggs should be eliminated, thus permitting these articles to move in as direct a line as possible from purchaser to consumer. Similarly, the leading organized produce exchanges (grain, cotton and sugar) were requested, as will be explained later, radically to alter their methods relating to the conduct of business in "futures", in order not to interfere with the Government's purchases of certain commodities or to hamper the Government's policy of stabilizing prices. All retail dealers have been ordered to stop the practice of making "combination sales" whereby customers must purchase a certain amount of other articles in order to obtain a certain commodity.

Besides waging a far-reaching food-conservation campaign with a view to having the public adopt self-imposed restrictions in the form of wheatless and beefless days, the Food Administration has brought all bakeries in the United States, including those of hotels, restaurants and clubs but excluding those which use less than 10 bbl. of flour per month, under Government license, and subjects them to all Food Administration rules prescribing the weight and ingredients of loaves. Moreover, through the Fuel Administration and the War Industries Board, maximum prices have been fixed on numerous basic commodities, particularly bituminous and anthracite coal, coke, pig iron, steel and steel products, and copper. In these cases, according to reports, the price to the public and to the Allies has been the same as that to our Government and considerably below the market price prevailing at the time. As regards some articles, particularly coal, the price-fixing policy was extended to the wholesaler and retailer as well as the producer. Moreover, in various reported instances, where producers objected to the Government-fixed price, prompt warning was given to keep the mines running or have their operation taken over by the Federal Government.

Government Control of Exports and Imports.—Owing to the international character of the war, the foreign branch of our commerce presents many problems that require a centralized control. Thus, a recently appointed committee of railroad experts undertook the control of the entire export traffic of the eastern railroads in the manufactured forms of iron and steel, including billets, bars, plates, scrap and pig iron (except for the U. S. Government), and according to published reports, it is planned ultimately to give this committee charge, with the approval of the Federal authorities, of all export traffic of the eastern roads, including that of the Government (see also XIX, *Railroads*). Similarly, the American Iron and Steel Institute has assumed control of all importations of tin; all books and documents of importers may be required for inspection by authorized officials, and importing consumers must agree to use the metal for their own manufacturing needs and not to resell it to other dealers.

From time to time the War Trade Board has placed numerous commodities in the so-called "conservation list", their exportation in that case being allowed only under unusual conditions, *i. e.*, when it is clearly established that they would be used to the best advantage in the prosecution of the war. Announcement has been made, however, that in some instances such listed articles will be released in exchange for commodities needed in this country but which have been placed on embargo lists by foreign Governments. On Nov. 29 the President, acting under authority of the Trading with the Enemy Act (see I, *The Sixty-fifth Congress*), issued a proclamation placing under license the importation of practically every basic commodity from every other nation, the order to be carried into effect by the War Trade Board. This ruling constitutes a powerful weapon for the United States for use in the case of those countries which have rendered aid to its enemies, and also for the purpose of curbing the trade of German-controlled firms in various countries, particularly in Mexico and Central and South America. Mention should also be made of the system for controlling the exportation of coin, bullion and currency with a view to furnishing certain quantities of exchange in our foreign trade so as to avoid any disturbance incompatible with the best interests of the nation (see also XIII, *Banking and Currency*). In this respect the Trading with the Enemy Act gives to the Administration full power to control not only the movements of coin, bullion and currency but power to control all dealings in foreign exchange.

Government Control of Transportation.—On Sept. 6 the U. S. Shipping Board announced that it would soon undertake the control of freight rates charged by American vessels, and that it had been decided to establish a Chartering Commission to assume control over the chartering of all American tonnage. According to reports the new scale of rates will represent a large reduction from prevailing rates, and while the new rates are applicable only to Government shipments, it is generally expected that the proposed Commission will also enforce the same rates on other cargo-carrying vessels (see also XIX, *The Merchant Marine*). Along this line it should also be noted that as regards rail transportation the Director of Priority Transportation is given the power to order that shipments of certain commodities be given priority over all other shipments, a power that has recently assumed prominence in the press in connection with attempted alleviation of the coal shortage. As the war progresses, our transportation system is apparently more and more demonstrating its inadequacy to handle the situation, especially in view of the labor problem, the lack of equipment and other facilities and the inability to raise additional and much-needed capital. It is admitted on every hand that some radical action must be taken to prevent a breakdown of our transportation system, and it is only with reference to the method of aid that differences exist. One group argues for higher rates and government assistance in the form of loans, while another insists that nothing short of government operation will enable the nation to meet the needs of the present emergency. Whatever the outcome, it seems clear that some form of control, much more centralized than the present, will come into existence in the near future. (See also XIX, *Railroads.*)

As this year closed, an attempt to clear the railroad situation was made in the appointment by President Wilson of Secretary of the Treasury William Gibbs McAdoo as Director-General of Railroads. Mr. McAdoo's first act was to pool the railroad facilities of the country with a view to relieving freight congestion.

Produce Exchange Restrictions on Future Dealings.—As the war progressed it became increasingly apparent that the free operation of supply and demand on our leading organized produce markets had serious shortcomings in war times, and that it was necessary, in order to stabilize prices, to follow the policy, adopted by leading European belligerents, of restraining unwarranted speculation. Unusually high prices had been reached on our produce markets by the end of the first quarter of 1917. In fact, the markets had become thoroughly disarranged, chiefly because of the abnormally small crop of 1916, the breakdown in the system of distribution because of the inability of the railroads to render normal or efficient service, the abnormal demands upon us from all importing countries since over half the world was at war, the tendency towards inflation along all lines, and the prevalent practice of hoarding supplies by consumers and of profiteering by producers and dealers. The situation that resulted gave the false impression of a condition bordering on famine and produced a feeling among the general public little short of hysteria. In these circumstances the Government saw fit to make certain requests of the leading produce exchanges, which were promptly complied with. Briefly outlined the following radical changes deserve special mention:

(1) The establishment by the Chicago Board of Trade of a maximum price for wheat May futures at or under which sales may be made, all buying at the same time being forbidden except to close out accounts. At the same time no trading in corn or oats options was permitted, except to close deals. According to its president, such action was without precedent in the history of the Chicago Board of Trade, although other exchanges in the United States, Canada and Europe had taken similar action at various times. This decision of the world's leading market became necessary when trading in May fu-

tures had advanced wheat to $3.25 a bushel, the highest price in its history. With prices leaping from 10 to 15 cents a day, it was difficult to tell how much higher May contracts, with the wheat supply practically cornered, might have gone if a maximum price had not been established. It may be added that the action taken by the nation's leading exchange was immediately followed by similar action at St. Louis, Duluth, Kansas City, Minneapolis and Toledo.

(2) The amendment adopted by the New York Cotton Exchange on Aug. 15, providing that fluctuations in future prices in any one day should not exceed three cents (300 points) per pound above or below the closing price of the previous day. This rule, said to have been adopted after consultation with government officials, has for its purpose the prevention of abnormal fluctuations and the elimination of speculation as far as possible. At the time of its adoption fluctuations in the cotton market were extreme, owing to conditions arising out of the war, and the rule thus served as a safeguard against a repetition of a five-cent break in one day, as was the case in the early part of February. The rule is to remain in effect "during the period of the war and for such period after the declaration of peace as the Board of Managers may hereinafter determine".

(3) A similar resolution was passed by the Chicago Board of Trade on Dec. 4 relative to provisions. The new rule was to the effect that no daily fluctuations of price in any delivery of provisions beyond 50 cents per hundredweight for lard and ribs or $1.00 per barrel for mess pork from the last previous closing prices would be permitted. Purchases or sales of provisions for future delivery were also limited to six months ahead of the month current at the time of the transaction. Likewise, all trading in provisions, either for the current month or for future delivery, were prohibited if made with a view to unduly influencing quotations.

(4) The action of the Chicago Board of Trade, in response to a request from Mr. Hoover, the Food Administrator, to discontinue all trading in September wheat after Aug. 25. This action meant that, since September wheat was the only delivery traded in on the Chicago Board, there would be no more future trading in wheat until future notice. Arrangements had been made whereby, on Sept. 1, the Food Administration at Washington would undertake the purchase of wheat for the Government at interior terminals. For this reason it was desirable to have the grain exchange discontinue future trading in order not to render difficult the Government's attempt to stabilize prices. Moreover, trading in wheat on the Board had diminished to a very small volume, since most of the speculative transactions had been retired.

(5) The adoption of resolutions by the Chicago Board of Trade on July 31 stopping all trading in September corn. The settlement price was placed at $1.65, or the figure that had been fixed previously on June 4 as the maximum price on corn futures. The resolution also provided that "all transactions in indemnities" (commonly known as "puts" and "calls") in September corn should be declared null and void, and the seller was ordered to refund to the buyer the purchase price of the indemnities.

(6) The action of the New York Coffee and Sugar Exchange, in response to the suggestion from the Food Administrator, to suspend all trading in sugar futures on the Exchange until further notice. Liquidation of existing contracts, if desired, had to be effected through a temporary liquidating committee at prices not below or above those established by the Future Quotations Committee at the time trading was suspended.

Stock Exchange Restrictions on Speculation and Short-Selling.—Important regulations relating to the conduct of business, however, were not limited to produce exchanges. Owing to the violent fall in security prices, often bordering on collapse, various stock exchanges undertook to place checks upon speculation. Thus, on Oct. 30 the Montreal and Toronto Stock Exchanges resorted to the minimum-price system, and the Pittsburgh Exchange followed suit on Nov. 2. The action of the Canadian Exchanges was attributed to the shortage of credit supplies for market purposes, the steady diversion of investment funds from existing corporate securities into war loans, and the sympathetic depreciation resulting from the violent decline in the New York market (see *supra*). The action of the Pittsburgh Exchange, likewise, had for its purpose the protection of securities whose violent downward course was regarded as entirely out of keeping with actual values. Here the minimum-price ruling applied to all securities except those which were also listed on the New York Stock Exchange. Subsequently the rule was modified by removing the minimum restriction from all stocks with a market value of $15 a share or under and by reducing the minimum prices on a number of securities to a lower level.

Thus far the New York Stock Exchange has not seen fit to reintroduce the minimum-price system adopted for a while following the reopening of the market in the latter part of 1914. Action, however, was taken by this Exchange to supervise short-selling. Owing to allegations that "bear" operators were primarily responsible for the collapse in stock prices, the New York Exchange took steps on Nov. 1 to keep the activities of short-sellers under surveillance and to see whether enemy interests were depressing American security prices. Accordingly the Governing Committee of the Exchange required all members, or their firms, who borrowed stocks either for themselves or for customers to furnish to the Clearing House Committee at noon of each day a list of all stocks borrowed, together with the names and amounts of the borrowed stocks and the names of the parties from whom borrowed. At the same time a list of the names of customers for whom stocks were borrowed and the amounts borrowed for each had to be furnished in a sealed envelope. Lenders of stock were also required to furnish a list of all loaned stocks, such list stating the names and amount of such loaned stocks, the names of the borrowers, and the amounts loaned to each borrower.

Following this rule numerous criticisms appeared to the effect that the Exchange's action failed to apply to floor traders or customers who had sold short and covered their sales on the same day. Accordingly, the New York Exchange adopted another rule requiring all members, or their firms, to deliver to the Clearing House Committee, at noon of each day, and in a sealed envelope addressed to the Committee on Business Conduct, a statement of the amounts and names of all stocks sold and bought in on the previous day, for their own account, and also for the account of their customers, in the latter case stating their names.

Contract Form of New York and New Orleans Cotton Exchanges.—As a result of the suit of Thorn & Maginnis, cotton brokers of New Orleans, against Browne to collect on a cotton-futures transaction, Federal Judge Youmans handed down a decision at Fort Smith, Ark., on July 31, to the effect that the present standard form of contract used on the New York and New Orleans Cotton Exchanges is illegal in that it does not comply with the provisions of the new Federal Cotton Futures Act (*A. Y. B.*, 1916, p. 345). The decision is based on the ground that the contract fails to reveal specifically the name of the principal as is required by the law. The plaintiff, however, is quoted as maintaining that such a decision, if finally upheld, would close every future market in cotton because in ever so many cases the principal lives hundreds of miles from the exchange, thus making it impossible for him to be present to sign the slips as they pass from broker to broker. In rendering his decision, Judge Youmans said:

> It seems to me that the meaning of the Act is that every transaction shall stand by itself. It shall show upon its face the name of the buyer, and the seller, and the truth of the transaction. . . . Now, if the rules of the cotton exchange are such as that they must fall or the statute must fall, I think there will be no doubt that it must be held that the rules of the cotton exchange must be modified to meet the statute. The law was directed only to cotton exchange dealings in cotton; that is the point, and Congress saw fit to pick that particular business out from among dealings in any commodity and supplied certain rules to it and it strikes me that was the object Congress must have had in view.

Blue-Sky Laws.—The account in the Year Book for 1916 (p. 344) reviewed the decisions of the lower Federal courts declaring the unconstitutionality of the "blue-sky" laws of Iowa and Michigan. On Jan. 22, 1917, however, the U. S. Supreme Court in three far-reaching decisions upheld the constitutionality of the Ohio, Michigan and South Dakota laws (see also VIII, *Law and Jurisprudence*). The chief contention of certain bankers, corporations and security dealers against the laws was that securities, since they are instrumentalities of commerce, are exempt from state regulation and subject only to the supervision of the Federal Government. In addition to this point, the lower courts maintained that the laws constituted an undue burden upon interstate commerce and that they exceeded the state's police power of local supervision. The states, on the other hand, maintained that the laws were designed for the sole purpose of preventing fraud; that, unlike the type of Kansas legislation, they did not attempt to prevent unwise investment; that they did not burden interstate commerce since they applied only to sales within the states; and that they did not exceed normal state police powers since they undertook only to prevent the defrauding of citizens. In upholding the laws the Supreme Court ruled, Justice McKenna handing down the decision:

> Prevention of deception is within the competency of government. The intangibility of securities, being representatives of property in distant States, and the integrity of them can only be assured by the probity of the dealers in them and the information they are required to give. This assurance the States deemed necessary for their welfare to require, and that requirement is not unreasonable or inappropriate.
>
> We cannot stay the hands of Government upon a consideration of the impolicy of its legislation. Every new regulation of business meets challenge. But the policy of a State and its expression in laws must vary with circumstances.
>
> The statutes burden honest business, it is true, but burden it only that under its forms dishonest business may not be done. Expense may thereby be caused, and inconvenience, but to arrest the power of the State by such considerations would make it impotent to discharge its functions. It costs something to be governed.

During 1917 new laws were enacted in California, Minnesota, Illinois and Pennsylvania. The California law revised an existing law which applied only to the original issue of securities in the state, and, therefore, did not apparently cover the issue of securities in wildcat companies in other states to promoters, who would then bring them into the state for resale as their personal property. Under the new law every person or company selling securities in the state, whether they were originally issued in the state or elsewhere, must secure a certificate authorizing said person or company to act as a broker. All advertising matter relative to the sale of securities must also be filed with the Commission. The Minnesota law created a State Securities Commission, consisting of the public examiner, the attorney-general, the state superintendent of banking and the insurance commissioner, and requires all dealers not only to be licensed but to advise the Commission in advance of all new offerings. Any offering considered fraudulent or unfair may be suspended and after investigation may be prohibited altogether. The Illinois law, to become effective on Jan. 1, 1918, belongs to the class of laws adopted by South Dakota and Minnesota. Having the protection of unsophisticated buyers in view, the law does not cover sales to corporations and licensed dealers. The essential difference between this law and the recent Minnesota act consists of the prohibition in the Illinois act of any sales within the state until the particular security has been licensed, while the Minnesota law only requires the licensed dealer to file information and thus give the Commission the power to investigate and suspend. This difference is considered far-reaching in its importance to interstate dealers who make only a limited number of sales of a particular security in any one state. Pennsylvania also passed a law preventing the issuance of stock to persons selling shares in insurance companies. Full information about companies, according to this law, must be filed with the insurance commissioner before any of the shares can be sold in the state.

ECONOMICS

WESLEY C. MITCHELL

Distribution.—Perhaps the most important publication of the year within the field of distribution is G. A. Kleene's little book on *Profit and Wages*. It is symptomatic of the present situation in orthodox circles that Kleene spends himself chiefly in subtle criticisms of recent writers. On the positive side his conclusions carry us, not forward, but "back to the doctrines of the classical school . . . a residual claimant theory of . . . profit not differing greatly from Ricardo's; and the 'wages fund' theory" (p. 164). J. A. Ryan's *Distributive Justice* (Macmillans) is an ethical treatise written from the viewpoint of the Roman Catholic Church rather than an economic contribution. The other items to be noted deal with special points. P. G. Wright has investigated consumers' surplus and total utility when incomes are unequal. He finds that, in general, inequality enhances consumers' surplus, but reduces total utility (*Quart. Jour. of Economics*, February). Finally, A. F. McGoun has argued that "the rate of interest tends to vary directly with the aggregate consumption of society, and with the amount of leisure which people allow themselves, and inversely with the general efficiency of labor" (*ibid.*, August).

Value.—The chief advances of the year have been achieved in dealing with novel problems, some of them discovered within old boundaries, some of them found outside. H. W. Stuart has made a singularly fresh contribution to the theory of value by asking this question: "How are we to understand the acquisition, by an individual, of what are called new economic needs and interests?" (*Creative Intelligence*, by John Dewey and others. Holt.) His answer shows that we should "regard what is called economic choice not as a balancing of utilities, marginal or otherwise, but as a process of 'constructive comparison'". Stuart points out that when price is the dominant conception, "constructive comparison" is nothing if not a market process, and shows that the economic analysis of this process is far from satisfactory.

B. M. Anderson, Jr.'s *Value of Money* (Macmillans) is an elaborate criticism of the quantity theory of money, particularly in the form presented by Irving Fisher. Anderson's way of treating the subject, however, makes his book much more than a technical monetary treatise. He begins by expounding the social theory of value of which he is one of the chief exponents; he applies this theory to the special case of money in the constructive part of his book, and he concludes by arguing that the theory of money resulting from this application affords a basis for "reconciling statics and dynamics", that is, for bringing together the abstract theory of price and realistic studies of economic change.

An interesting analysis by Taussig extends the accepted theory of international trade to the case in which one trading country has a paper and the other a specie standard. He finds that the course of prices in both countries would be the opposite of that expected under specie conditions (*Quart. Jour. of Economics*, May).

Realistic Studies.—R. M. Woodbury has proposed to use the intelligence tests developed by psychologists to investigate the correspondence between the distribution of wages and of native ability (*ibid.*, August). A most interesting discussion of lumber prices has been conducted by G. A. Stephens and W. Compton in the *American Economic Review* (June and September). B. W. King and W. M. Persons have corrected and extended our quantitative knowledge of certain phenomena of business cycles (*Quart. Jour. of Economics*, August; and *Quart. Publ. of Am. Statistical Assoc.*, June), while J. M. Clark has improved upon previous analysis of the relationship in quantity and time between demand for products and demand for the means of production (*Jour. of Pol. Econ.*, March). Henry L. Moore has published another of his remarkable quantitative studies—*Forecasting the Yield and the Price of Cotton* (Macmillans). He shows by mathematical analysis that the yield can be foretold from summer figures of rainfall and temperature in the cotton belt more accurately than they are forecasted by the Department of Agriculture from its autumn reports on the condition of the crop. Further, he has developed an equation for forecasting the price from the indicated crop.

Economic Evolution.—Veblen's *Nature of Peace* carries further the speculations presented in his *Business Enterprise* (1904) and *Imperial Germany* (*A. Y. B.*, 1915, p. 668). The discipline of modern machine industry, Veblen thinks, has been the most potent factor in producing a matter-of-fact habit of mind and dissolving mediæval prejudices. Germany and Japan have practiced machine production long enough to attain mechanical efficiency, but not long enough to reap many of the cultural consequences. Hence, the sentiment that favors war—a patriotism obsequious toward rulers and truculent toward foreigners—has been better preserved in these two countries than in the other great powers. Germany and Japan are therefore the most likely disturbers of the peace in the next two or three generations. The other nations can maintain peace either by submission to the imperial ambitions of this pair, or by making the more powerful one incapable of aggression. But if a league to enforce peace achieved its purpose for any length of time, Veblen thinks that the matter-of-fact habit of mind bred by modern industry would gradually undermine the sentimental basis upon which rest our present capitalistic institutions.

The Aim of Economic Theory.—From the preceding account it appears that economics continues to grow faster along its edges than at its orthodox center. Representatives of the traditional types of economic theory not unnaturally look askance upon certain of the new developments. "Interesting, but not economics—certainly not economic theory", has been their verdict upon numerous borderland investigations. But indications are multiplying that economists are more likely to stretch their conception of economic theory than to limit their problems. At the conference of the Western Economic Society, for example, J. A. Field gave expression to the following statement (*Jour. of Pol. Econ.*, January):

> The most useful plane for economic theorizing is neither on the surface-level of fact nor at the depth of first principles. It lies somewhere between. There theory in its more robust sense organizes, relates, and interprets the material of our observation. It is the systematic framework that articulates detailed descriptive knowledge. And it tests its validity by the degree to which it informs with general meaning the aggregate of our concrete experiences of mankind getting a living in modern society.

Again, it is the "marked tendency toward the broadening of the scope of economic inquiry" that has induced J. Viner to reopen certain old discussions of economic method (*ibid.*, March). Once more, A. P. Usher has argued that no arbitrary limitations can be drawn round the proper field of economics, because of the multiplicity of interests, each suggesting a different boundary, which impel men to this study (*Quart. Jour. of Economics*, August).

XIII. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC FINANCE

C. C. WILLIAMSON

FEDERAL FINANCE

Receipts and Expenditures.—The following table shows the ordinary receipts and expenditures of the Federal Government for the fiscal years ending June 30, 1916, and June 30, 1917, in millions of dollars:

	1916	1917
ORDINARY RECEIPTS		
Customs	$212	$226
Internal revenue:		
Ordinary	388	450
Corporation income tax	57	180
Individual income tax	68	180
Miscellaneous	53	82
Total	778	1,118
ORDINARY DISBURSEMENTS		
Civil and Miscellaneous	231	265
War	132	410
Navy	155	257
Indians	18	31
Pensions	159	160
Postal deficiency	6	
Interest on public debt	23	25
Total	724	1,148
Excess of ordinary receipts over ordinary expenditures	54	30
Balance in General Fund at close of year	235	1,067

The following statement shows the financial transactions of the Panama Canal to June 30, 1917:

Total amount expended or advanced to disbursing officers for purchase, construction, fortification, etc., to June 30, 1917	$419,021,976
Amount thereof reimbursable by bonds	375,161,244
Amount expended from proceeds of bonds, including premiums	138,600,869
Amount expended or advanced to disbursing officers out of ordinary receipts	236,560,375
Total Panama Canal bonds authorized by law	375,200,980
Total Panama Canal bonds issued to date	$134,631,980
Balance of bonds authorized but not yet issued	240,569,000

The following table shows extraordinary disbursements and special revenues from Panama Canal tolls and from the sale of bonds, for the two fiscal years 1916 and 1917, in thousands of dollars:

	1916	1917
SPECIAL DISBURSEMENTS		
Panama Canal	$18,630	$19,783
Virgin islands	......	25,000
Subscription to stock of Federal land banks	......	8,880
Purchase of obligations of foreign Governments	......	885,000
Total	18,630	938,663
SPECIAL REVENUES		
Panama Canal tolls	......	6,151
Liberty Loan bonds	......	1,466,335
Certificates of indebtedness	......	918,205
Postal-savings bonds	1,804	1,795
Deposits for purchase of one-year Treasury notes of April 1, 1916	......	4,390
Deposits for retirement of National bank notes	56,640	39,293
Total	58,453	2,434,169

Income Tax Receipts.—Receipts from the income tax on individuals amounted in the fiscal year ending June 30, 1917, to $180,108,340.10, $12,321,250.71 of which accrued prior to Jan. 1, 1916, under the act of Oct. 3, 1913. The higher rates provided in the act of Sept. 8, 1916 (*A. Y. B.*, 1916, p. 351), resulted, as the table on the following page shows, in an increase of more than 165 per cent. in total receipts.

Receipts from the corporation income tax also increased from $56,972,720 in 1916 to $179,539,631 in 1917.

	1913–14 000 omitted	1914–15 000 omitted	1915–16 000 omitted	1916–67 000 omitted
Normal tax	$12,728	$16,560	$23,996	$63,443
Additional tax or super-tax	15,512	24,423	43,765	116,419
Received in compromise	14	63	183	246
Total	$28,254	$41,046	$67,944	$180,108

Public Debt.—The following is a statement of the public debt of the United States as of June 30, 1917:

Interest-bearing debt:	
2s, Consols of 1913	$599,724,050
3s, Loan of 1908–1918	63,945,460
4s, Loan of 1925	118,489,900
2s, Panama Canal Loan, 1906	48,954,180
2s, Panama Canal Loan, 1908	25,947,400
3s, Panama Canal Loan, 1911	50,000,000
3s, Conversion Bonds, 1916	28,894,500
3s, One-Year Treasury Notes, 1916	27,362,000
2½s, Postal savings bonds, 1911–1915	9,151,800
2½s, Postal savings bonds, 1916	887,960
3s, Certificates of Indebtedness	61,306,032
3¼s, Certificates of Indebtedness	211,551,100
3½s, Liberty Loan, 1917	1,466,335,095
Debt bearing no interest:	
United States notes (greenbacks), less gold reserve	193,701,990
National Bank notes (redemption account)	48,235,167
Old demand notes	53,153
Fractional currency	6,846,568
Debt on which interest has ceased:	
Funded loans of 1891	24,950
Loan of 1904	13,050
Funded loan of 1907	506,100
Refunding certificates	11,560
Old debt	900,970
Certificates of Indebtedness, matured June 30, 1917	12,775,600
Total interest-bearing debt	2,712,549,477
Total debt on which interest has ceased	14,232,230
Total debt bearing no interest	248,836,878
Total interest and non-interest bearing debt, June 30, 1917	2,975,618,585
Balance in Treasury less warrants, coupons and checks outstanding	1,066,988,361
Net debt, June 30, 1917	1,908,635,224

The Preparedness Programme.—The report of the Secretary of the Treasury transmitted to Congress on Dec. 6, 1916, estimated a balance of nearly $115,000,000 in the General Fund for the year ending June 30, 1917, a deficit of $185,000,000 by June 30, 1918, and an actual excess of disbursements over receipts for the year 1918 of $300,521,000, due mainly to the preparedness programme of 1916. Methods of raising revenue to meet this threatened deficit at once engaged the attention of the Sixty-Fourth Congress in its final short session. Among the principal methods discussed were bond issues, the restoration of tariff duties on wool, rubber and coffee and an increase of the duty on sugar, a lowering of the income-tax exemption, an increase in the inheritance tax, and an excess-profits tax (see also *infra*). An administration bill combining the two latter forms of taxation and loans, calculated to yield about $226,000,000, was enacted on March 2 (see also I, *The Sixty-Fourth Congress*).

War Finance.—With the coming of war, however, all plans worked out for financing the programme of preparedness at once became obsolete. On the approval of the war resolution on April 6, Secretary McAdoo immediately advised Congress of the Government's financial needs, and on April 24 the greatest bond bill in the history of the country up to that time became law by practically unanimous vote (see also I, *The Sixty-Fifth Congress*). It authorized an issue of $5,000,000,000 of long-term bonds and $2,000,000,000 in certificates of indebtedness, and also authorized the Secretary of the Treasury, with the approval of the President, to loan $3,000,000,000 to the nations engaged in war with the enemies of the United States.

By July 1, over $1,000,000,000 had been advanced to the Allied powers by purchasing their securities running for the same length of time and bearing the same rate of interest as the bonds of the United States, and for the same purpose the estimated requirements for the next 12 months were placed at $4,000,000,000. As by far the greater part of the Allies' borrowings are used for purchases in the United States, these loan operations involve merely a shifting of credits without causing a serious strain on the financial resources of the country.

Instead of estimated expenditures amounting to $1,088,176,000, the total of expenditures by June 30 had reached the huge sum of over $2,000,000,000, of which $1,350,000,000 had been expended for war purposes since April 6. Early in August a revised estimate of war expenditure submitted to Congress by the Secretary of the Treasury, for the year ending June 30, 1918, amounting to $10,735,807,000, was made up as follows:

	Daily Average	Total
Army	$21,540,000	$7,864,240,000
Navy	3,300,000	1,200,000,000
Shipping Board	2,180,000	800,000,000
Other departments	2,380,000	871,567,000
Net cost	$29,400,000	$10,735,807,000
Loans to Allies (est.)	10,960,000	4,000,000,000
Gross cost	$40,360,000	$14,735,807,000

Revised estimates issued by the Treasury Department on Sept. 4 called for $8,107,901,096 for the War Department, $1,480,000,000 for the Navy Department, $1,375,715,325 for the Shipping Board, or a total of ordinary expenditures of $12,067,278,679, not including sinking-fund requirements or loans to the Allies. In December, however, it appeared from the actual experience of the first five months of the fiscal year that the earlier figure of $10,735,807,000, exclusive of loans to Allies, would prove to be an overestimate of the year's expenditures.

Against the estimated expenditures for the year 1918 there was an offset of estimated revenues on the basis of existing laws of $1,333,500,000, $2,000,000,000 of the bond issue authorized on April 24, and $393,500,000 available by bond issue, or a total of $3,727,000,000 receipts in sight, leaving $7,008,807,000 to be raised by loans and new taxes.

First Liberty Loan of 1917.—On May 14 an initial offering of an issue of $2,000,000,000 was announced and christened the "Liberty Loan". The bonds were dated June 15, 1917, and bore 3½ per cent. interest from that date, payable semi-annually (on Dec. 15 and June 15), maturing June 15, 1947, but redeemable on or after June 15, 1932. These bonds are exempt, both as to principal and interest, from all taxation, Federal, state and local, except inheritance taxes. By the terms of the contract also they are convertible into any bonds bearing a higher rate of interest to be issued during the period of the war.[1] They were issued in both coupon and registered form, the former in denominations as low as $50 and the latter as low as $100. In order to make it easy to subscribe, a plan of partial payments was adopted, extending to Aug. 30, as long a period as the necessities of the Government would permit. A payment of only two per cent. was required on application. More than 4,000,000 subscriptions were received, totalling $3,035,226,850, or over 50 per cent. more than the amount offered. Ninety-nine per cent. of the subscriptions were in amounts ranging from $50 to $10,000, and these were allotted in full. Those subscribing for larger amounts were allotted from 60 per cent. to 20 per cent. of the amount subscribed.

Second Liberty Loan.—A second loan of $3,000,000,000 was offered on Oct. 1, the subscriptions closing on Oct. 27, one-half of the excess subscriptions to be accepted. On this issue the rate of interest is four per cent., from Nov. 15, payable on May 15 and Nov. 15. The bonds run 25 years, redemption being optional after 10 years, and are convertible into any issue bearing a higher rate of interest issued during the war, provided application for conversion is made within six months of the date of announcement of the issue into which conversion is desired. These bonds also are exempt both as to principal and interest from state and local taxation, except state inheritance taxes, but they are not exempt from graduated additional income taxes or excess-profits and war-profits taxes levied by the Federal Government. Subscriptions in this case also were payable in instalments, the last on Jan. 15, 1918. A selling campaign unparalleled in the history of the nation was organized (see *Banking and Currency, infra*) and pushed with such success that a total of $4,617,532,300 was subscribed, an excess of 54 per cent. Approximately 9,400,000 persons subscribed, 99 per cent. of them in amounts ranging from $50 to $50,000, and these were allotted in full, the others being scaled down from 90 per cent. to 40 per cent. of the amount subscribed.

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[1] After the issue of the Second Liberty Loan the Secretary of the Treasury announced that the 3½ per cent. bonds could be converted into 4 per cent. at any time within six months from Nov. 15, and if not so converted, could be exchanged for any subsequent issue drawing more than 4 per cent.

War Credits Act.—On Sept. 24 the President approved an act authorizing the Secretary of the Treasury to borrow "from time to time" not exceeding $7,538,945,460 (in addition to the $2,000,000,000 Liberty bonds already sold) at a rate of interest not to exceed four per cent. Of this amount $3,063,945,460 was to be in lieu of that amount authorized by the Act of April 24, $225,000,000 in lieu of that amount authorized but not issued under the Act of Aug. 5, 1909, $150,000,000 in lieu of unissued bonds authorized by a joint resolution of March 4, 1917, and $100,000,000 in lieu of unissued bonds authorized by Act of March 3, 1917. The Secretary of the Treasury was authorized to establish credits with the United States for any foreign Governments engaged in war with the United States to the extent of $4,000,000,000, plus unexpended balances of appropriations made by the Act of April 24, and "to purchase, at par, from such foreign Governments respectively their obligations", provided the rate of interest on the foreign obligations is not less than the highest rate borne by obligations of the United States at the time of their acquisition; and if the United States bonds are converted into bonds of a higher date, a proportionate amount of bonds of foreign Governments must also be converted into the higher rate. Likewise the date of maturity of the foreign bonds accepted is not to be later than for the bonds of the United States issued under the Act of April 24.

Treasury Certificates.—Under authority of the Act of April 24, the Secretary of the Treasury offered through the Federal reserve banks certificates of indebtedness running a few months and bearing interest at rates from 2 to 3¼ per cent. These were offered periodically in amounts of about $200,000,000 at a time. Before the first Liberty Loan issue was completed, something like one-half of the $2,000,000,000 authorized had been issued, to secure funds for extending credit to the Allies. These certificates were accepted at par and accrued interest in payment for Liberty Bonds allotted to subscribers. The War Credits Act of Sept. 24 extended the power of the Secretary of the Treasury to borrow by means of certificates of indebtedness, payable within one year, and at such rates of interest as he may determine, from an aggregate of $2,000,000,000 to $4,000,000,000. (See also *Banking and Currency, infra.*)

War-Savings Certificates.—One of the most interesting features of the War Credits Act was a provision authorizing the Secretary of the Treasury to issue war-savings certificates on which interest to maturity is discounted in advance, in order to provide a government obligation in small denominations that would not entail the enormous expense involved in receiving partial payments on bonds and remitting the semi-annual interest. No charge is made for the certificate itself and none is issued unless one or more war-savings stamps are purchased and affixed at the same time.

Payments on account of war-savings certificates may also be evidenced by thrift stamps having a face value of 25 cents and bearing no interest. These stamps are not redeemable in cash, and must be attached to a thrift card which has space for 16 stamps. When filled with stamps, the card may be exchanged for a war-savings certificate by making an additional payment of 12 to 23 cents. Both kinds of stamps are to be sold by post offices, banks, railroad and express companies, department stores and various organizations. These certificates mature in five years and are redeemable at any time. The total amount outstanding at one time is not to exceed $2,000,000,000. These stamps, of the Series of 1918, dated Jan. 2, are worth $5 each at maturity, Jan. 1, 1923, and are to be sold during December, 1917, and January, 1918, at $4.12. At the beginning of each succeeding month the cost advances one cent. Under the terms of the Act no person may buy at one time more than $100 of these stamps or hold at any time more than $1,000.

War Income Tax.—Having made provision for the immediate needs by the Act of April 24, Congress went to work at once on a system of war taxation to supplement the revenues provided at the regular session (see also I, *The Sixty-Fifth Congress*). The basis of the War Revenue Act, finally approved on Oct. 3, is the war income tax, the war excess-profits tax, increased internal revenues, certain moderate excise taxes, etc. The estimated revenue from taxation under the Act in the fiscal year 1918 is $2,534,870,000.

The income tax act of Sept. 8, 1916 (*A. Y. B.*, 1916, p. 351), was amended by the Act of Oct. 3, allowing an exemption of $200 for each dependent child under 18 or other dependents physically or mentally deficient. The new war income tax levies a new normal tax of two per cent. and surtaxes of one to 50 per cent., in addition to the existing tax, which remains unchanged except as indicated above. All single persons with net incomes of $1,000 or over, and all married persons when living together, and heads of families, having net incomes of $2,000 or over for the calendar year, are required to make returns of income. Under the new law the system of "deduction at the source" has been abolished, except in certain cases, and a system of "information at the source" inaugurated. Corporations are required to give details of dividend payments, brokers to give the names of persons for whom business is transacted, with details as to profits, losses, etc., and all persons, partnerships, or corporations, and officers of the U. S. Government making payments of $800 or more to an individual are required to make a return.

Corporations, under the war income tax, pay a normal rate of four per cent., in addition to the existing tax of two per cent., to be computed, assessed and paid in the same manner as heretofore. A new feature is an additional tax of 10 per cent. on the net income of corporations remaining undistributed six months after the end of the calendar year, unless actually employed in the business or reasonably required by the business.

Excess-Profits Tax.—The Act of March 3 (see *supra*) provided an excess-profits tax, the revenue from which, together with one-third of an estate tax created by the same Act, was to constitute a "special preparedness fund". Under the Act corporations and partnerships, with certain exceptions, were required to pay a tax of eight per cent. on profits in excess of eight per cent. of capital invested, to be assessed at the same time and in the same manner as the income tax. This was repealed, however, by the War Revenue Act of Oct. 3 and a new law substituted which levies upon corporations, partnerships and individuals engaged in trade or business, including professions and occupations, a tax of 20 per cent. to 60 per cent. of the net income from capital invested in excess of such net income for the "pre-war" period, *i.e.*, the years 1911-13. A deduction of $3,000 is allowed for domestic corporations and $6,000 for domestic partnerships and citizens and residents. One feature of the law which has caused much criticism is the tax of eight per cent. on total incomes in excess of $6,000 where no capital, or only a nominal capital, is invested, as in trades and professions. Employees of Federal, state and local governments are exempt.

Methods of determining capital invested are explicitly provided. The tax itself is in addition to the regular income tax and war income tax, but is deductible from the net income subject to the income taxes. Finding the difficulties in applying the Act were both numerous and complex, Secretary McAdoo appointed an Excess Profits Advisory Board, consisting of experts in economics and business, to assist in analyzing the law and drafting regulations to make it effective. He also appointed a Board of Legal Review to advise with the Commissioner of Internal Revenue in dealing with the legal problems arising under the War Revenue Act in all its phases.

Munitions Tax.—The munitions tax

of Sept. 8, 1916 (*A. Y. B.*, 1916, p. 352), was amended by the act of Oct. 3, by reducing the rate from 12½ per cent. to 10 per cent. for the year 1917 and making the law inoperative on and after Jan. 1, 1918, instead of one year after the close of the war. Returns are to be filed and payments made at the same time and in the same manner as prescribed for income and excess-profits taxes.

Inheritance Tax.—The inheritance tax of 1916 (*A. Y. B.*, 1916, p. 351) was amended by the Act of March 3, by providing a 50 per cent. increase in the rates, while the Act of Oct. 3 provides additional rates, progressing from one-half of one per cent. on the amount of estates in excess of $50,000 to 10 per cent. on the amount in excess of $10,000,000. Such a part of an estate as is in excess of $10,000,000 will now pay a Federal inheritance tax of 25 per cent. The additional rates of 1917 do not apply to the estates of decedents dying in the service of the United States during the war or from injuries received therein.

War Excise Taxes.—Title VI of the War Revenue Act levies a variety of excise taxes. Manufacturers, producers or importers are required to pay taxes monthly on the following articles at a given percentage of selling price, as indicated:

Automobiles, automobile trucks, automobile wagons, and motorcycles, 3 per cent.; cameras, 3 per cent.; chewing gum, 2 per cent.; jewelry, real or imitation, 3 per cent.; proprietary medicines, 2 per cent.; piano players, graphophones, phonographs, talking machines and records, 3 per cent.; sporting goods and games, except playing cards and children's toys and games, 3 per cent.; toilet preparations, 2 per cent.

Stocks of the above articles held for sale by wholesale merchants or jobbers on the day of the passage of the Act were subject to a "floor tax" at half rates. On motion-picture films the tax is one-quarter cent per linear foot for unexposed films and one-half cent per linear foot for completed positive films, sold or leased.

The war excise-tax section also provides that on Oct. 3, 1917, and July 1 annually thereafter, and also at the time of original purchase by the user, taxes as specified below shall be imposed on "the use of" yachts and boats not used exclusively for national defense or not built according to plans and specifications approved by the Navy Department:

Motor boats, not over 5 net tons, with fixed engine, $5; boats over 5 net tons, not over 50 ft. in length, 50 cents per foot over all; length over 50 ft., but not over 100 ft., $1 per foot; length over 100 ft., $2 per foot.

War Taxes on Admissions and Dues.—Under Title VIII, from and after Nov. 1, 1917, a tax of one per cent. is collected for each 10-cent admission to places of amusement. For children under 12 the tax is one cent. A tax of 10 per cent. is also imposed on dues paid to clubs, associations, etc., if in excess of $12 a year. The Government collects the tax from the club, but the member is liable for it. Dues paid to fraternal beneficiary societies are exempt.

War Stamp Taxes.—Under Title VII also, on and after Dec. 1, 1917, the following stamp taxes are levied:

Indemnity bonds, 50 cents each; when premium is charged, 1 per cent. per $1 of premium; bonds, debentures, or certificates of indebtedness and renewals, 5 cents per $100, face value; capital-stock certificates, on each original issue whether for organization or reorganization, 5 cents per $100 face value; without face value, actual value $100 or less, 5 cents per share; without face value, but with actual value above $100, 5 cents each $100 actual value; stock transfers, 2 cents per $100 face value; with par value, actual value $100 or less, 2 cents per share; without par value, actual value above $100, 2 cents each $100 actual value; produce sales on exchange for future deliveries only, 2 cents per $100 in value; drafts and checks, not payable at sight or on demand, and promissory notes, 2 cents per $100; conveyance of real estate exceeding $100, not given to secure a debt, 50 cents per $500; steamer tickets one way or round trip, costing more than $10, to ports outside of United States, Canada or Mexico, graduated rates from $1 to $5; voting proxies, 10 cents each; powers of attorney, 10 cents each; Custom House entries, graduated rates, from 25 cents to $1 each; Custom House withdrawals, 50 cents each; playing cards (after Oct. 8, 1917), 5 cents additional per pack.

War Tax on Facilities Furnished by Public Utilities and Insurance.—Under Title V, from and after Nov. 1, 1917, purchasers of transportation are taxed as follows:

Eight per cent. of each passenger fare by rail or water exceeding 35 cents, commutation or season tickets for distances less than 30 miles being exempt; 10 per cent. of amount paid for parlor-car, sleeping-car or stateroom accommodations; 3 per cent. of amount paid for transportation of freight between points within the United States; 5 per cent. of the amount paid for transportation of oil or pipe lines; 5 cents for each telephone, telegraph or radio message originating within the United States and costing 15 cents or more; 1 cent for each 20 cents or fraction paid for express charges on parcels or packages.

Individuals or corporations issuing insurance policies are required to pay the following taxes within the first 15 days of each month:

Life insurance, except reinsurance, eight cents per $100 of policy; life-insurance policies of $500 or less issued on weekly-payment plan, 40 per cent. of the first weekly premium; fire, casualty, liability and all other insurance and renewals, except reinsurance, 1 cent on each $1.00 of premium.

War Tax on Beverages.—Under Title VIII, on and after Oct. 3, 1917, taxes are imposed on beverages as follows, in addition to existing taxes:

Fermented liquors containing ½ per cent. or more of alcohol, $1.50 per barrel; distilled spirits, for other than beverage purposes, $1.10 per gallon; for beverage purposes, $2.10 per gallon; rectified, purified, or refined subsequent to passage of law, except redistilled aromatic gin, 15 cents per gallon; grape brandy or wine spirits, withdrawn for fortification of sweet wine, 20 cents per proof gallon, additional to above taxes; sweet wines, 10 cents per proof gallon; still wines and vermuth, champagne and other sparkling wines, liqueurs, cordials, imitation wines, etc., double the existing tax; grape juice, ginger ale, pop, root beer, sarsaparilla, soft drinks, artificial or natural mineral or table waters, when sold for more than 10 cents per gallon, and fermented liquors containing less than ½ per cent. of alcohol, 1 cent per gallon; syrups and extracts for manufacture of soft drinks, 5 cents to 20 cents per gallon; carbonic acid gas, for use in manufacture of carbonated water and soft drinks, 5 cents per pound.

War Taxes on Cigars, Cigarettes, and Tobacco.—Under Title IV, on and after Nov. 2, 1917, cigars, cigarettes and tobacco are taxed as follows:

Cigars, additional to existing tax, 25 cents to $7 per 1,000; cigarettes, additional to existing tax, 80 cents to $1.20 per 1,000; cigarette papers, ½ cent or 1 cent per set; cigarette tubes, 2 cents per 100; manufactured tobacco and snuff, 5 cents per pound additional to existing tax.

Postal Rates.—Under Title XI, beginning Nov. 2, 1917, the rate on first-class mail matter was increased from two to three cents an ounce, except for "drop letters"; on postal cards from one cent to two cents. Increased rates on second-class mail take effect July 1, 1918. Parcel-post packages on which the charge is 25 cents or more must pay a war stamp tax of one cent additional for each 25 cent charge. (See also XIX, *The Post Office.*)

STATE AND LOCAL FINANCE

The legislatures of all but a very few of the states held regular or special sessions during 1917. Within the scope of a review of this character it is as impossible as it is undesirable to refer to numerous slight amendments which involve no important change of principle and no significant change of method or machinery. Nearly all of the amendments are concerned merely with minor changes in rates, exemptions, or administrative methods.[1] Only one state, Kentucky, thoroughly overhauled its tax system, for which an extraordinary session of the legislature was called; to the principal measures enacted in that state we refer under their appropriate subject.

Tax Commissions.—Two permanent tax commissions were created during the year, while in several states commissions were reorganized or their powers changed; one commission was abolished. The Kentucky legislature (Ch. 1) wisely created a commission to administer the new revenue system. It consists of two members appointed by the governor for a four-year term, with the auditor of public accounts *ex officio*. The appointive members must represent the two dominant political parties and give their entire time to the office, at a salary of $3,600. The Commission is endowed with broad powers in the assessment and equalization of property, and is specifically required to advise with and supervise assessing officers and to organize a conference with county tax officials each year.

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[1] For a fairly complete review of tax laws passed in 1917, see an article by the author in the *Proceedings* of the annual meeting of the National Tax Association, held in Atlanta, Ga., Nov. 13-16, 1917.

A commission of three members, appointed by the governor, was created (House Bill 379) in Missouri. It is given authority and general supervision over all assessing officers and county boards of equalization, as well as exclusive power of original assessment of public-utility corporations, heretofore possessed by the state Board of Equalization. In addition to its normal functions relating to taxation, the Commission is required to make a state budget and to supervise and investigate state expenditures.

In Washington the State Board of Tax Commissioners was abolished (Ch. 54) and its powers and duties vested in a single commissioner appointed for a four-year term by the governor and removable by him at will. The personnel of the Nevada Tax Commission was changed (Ch. 177) by dropping two of the three members of the railroad commission, serving *ex officio*, and, instead of one appointed member, providing five members appointed by the governor for four-year terms from the state at large, no two of whom may be from the same county. The Oregon commission, as created by a 1913 statute (Ch. 193), consisted of two tax commissioners and the governor, secretary of state and state treasurer, *ex officio*. One of the appointive members has now been dropped (Ch. 236); the one remaining, to devote all his time to his duties at a salary of $3,500, must be "skilled and expert in matters of taxation".

In Montana a temporary Tax and License Commission was provided, the members being named in the act (Ch. 73). This commission has broad powers of investigation, and is required particularly to inquire into the amount of taxes paid by corporations and to coöperate with the State Board of Equalization. Its final report is to be submitted not later than November, 1918. By resolution (No. 46) the North Carolina legislature provided a special commission, consisting of the governor, the chairman of the State Tax Commission and four other persons appointed by the governor, to make an "extensive investigation" and submit to the legislature a comprehensive plan or plans of taxation. The resolution specifically requests an exhaustive study of the practicability of the separation of sources of state and local revenue.

Income Taxes.—A general income tax law was enacted in only one state —Missouri. The law (Senate Bill 415), which applies to corporations as well as individuals, is an adaptation of the Federal income tax. One-half of one per cent. is levied on incomes from all sources in excess of $3,000 for single and $4,000 for married persons. Property from which income is derived is not exempt. In Delaware an income tax (Ch. 26) of one per cent. was levied on the net income of natural persons whose gross income is $1,000 or more. Corporations are required to furnish to the collector of state revenue any information requested. The Oklahoma income-tax law of 1915 (Ch. 164) was amended (Ch. 265) by providing an elaborate procedure against those who fail to make a report or who render a false statement. A sweeping reduction in the rates is also made and the stringent prohibition on printing or making known the returns modified. A dozen or more minor amendments were made to the Wisconsin law. The Massachusetts law was amended (Chs. 317 and 339) in relation to the distribution of the proceeds of the income tax. In South Dakota a proposed constitutional amendment (Ch. 168) will permit the taxation of incomes.

Inheritance Taxes.—Inheritance-tax legislation of some kind was passed during the year in at least a score of states. The enactments in the main are aimed at improved administration. The most interesting feature of the 1917 laws is the appearance of a system of farming out the collection by contracting with private persons to collect taxes due under the law for a percentage of the revenue received. In California the state comptroller is required (Ch. 721) to establish and maintain an inheritance tax department and in connection therewith to appoint an inheritance tax attorney and assistants. Such a bureau, if adequately supported and properly manned, might perform a most valuable service for the inheritance tax officials of all states. The collateral-inheritance tax law of Delaware was repealed (Ch. 7) and a new law passed taxing both direct and collateral heirs on a graduated scale, the maximum rate for direct inheritance being four per cent., and on collateral, eight per cent. A number of changes have been made in the Indiana act of 1913 (Ch. 118); conveyances, gifts or transfers made within two years of death, without consideration, are now subject to the inheritance tax. Exemptions are to be taken out of the first $25,000 of each beneficial interest. Several changes are made in the procedure of appraisal.

In Kansas (Ch. 319) the new Tax Commission, with increased powers, is to constitute an Inheritance Tax Commission. An amendment in Maine (Ch. 266) abolished the reciprocal provisions relating to the taxation of real and personal property of non-resident decedents, as well as the reciprocal provisions in respect to the property of resident decedents when situated in other states. Missouri repealed (House Bill 638) the collateral-inheritance tax law of 1909 and substituted therefor a direct tax on all degrees of relationship. The primary rates vary from one to five per cent., progressing according to the amount of the inheritance. On sums in excess of $400,000 six times the primary rate is levied. It is possible, therefore, that a rate of 30 per cent. may fall on a very moderate sum inherited by strangers in blood, by a body politic or associations and corporations.

North Dakota reënacted (Senate Bill 227) its inheritance tax with important changes. An Oklahoma amendment (Ch. 267) authorizes the state auditor, with the consent and approval of the attorney-general, to enter into contract with licensed attorneys to collect the inheritance tax, such agents to receive not over eight per cent. of the sum collected. Another amendment (Ch. 266) permits the exemption of estates situated partly outside of the state in the ratio which the property inside bears to the total. In Oregon (Ch. 372) the rates have been increased. In Texas a radical change was made in the method of collection (Ch. 166). Collection being in the hands of a county official, the state has heretofore lost large amounts of revenue. Now the comptroller of public accounts is authorized and directed to contract with someone to attend to the collection of the tax. The compensation under such contract is not to exceed 10 per cent. of the taxes collected.

One Utah act (Ch. 87) amends the inheritance tax in minor points relating to exemptions, while another (Ch. 3) gives the attorney-general power to obtain from domestic corporations information respecting stock holdings of any decedent. A Vermont act (No. 52) adds to the collateral-inheritance tax a graduated tax on direct inheritances in excess of $10,000 at rates ranging from one to five per cent. Various minor amendments were made in Washington (Ch. 146) in addition to a revision of the schedule of rates (Ch. 43). The new rates are progressive for direct as well as for collateral heirs, the highest rate being 15 per cent. instead of 12 per cent. as formerly. In Wisconsin also numerous amendments were effected, one of which (Ch. 320) involved a change in rates.

Mortgage and Secured Debts.—Tennessee has imposed (Ch. 70) a state privilege tax on mortgages or deeds of trust and similar instruments on real and personal property in lieu of all other taxes. Ohio has also enacted a sort of mortgage-recording tax. An amendment to the provisions for listing personal property (House Bill 214) exempts mortgages hereafter executed and recorded, and debts secured thereby, on real estate taxed in the state, if registered, and a registration fee of one-half of one per cent. paid thereon in addition to the recording fee. A constitutional amendment proposed (H. J. Res. 34) authorizes the passage of laws designed to provide against double taxation resulting from taxation of both real estate and mortgage debts secured thereby.

In Connecticut mortgage bonds of a corporation secured by a lien upon its property in the state are exempted (Ch. 230) to the extent to which the property is assessed locally. One of the new Kentucky tax laws (Ch. 11) imposes a tax of 20 cents on each $100 or fraction thereof of indebtedness secured by mortgage of property in the state, if the indebtedness in question does not mature within five years.

Minnesota has adopted an amendment (Ch. 73) imposing a tax of 15 cents on each $100 of real-estate mortgages in the state maturing within five years, and 25 cents on the $100 of such mortgages or parts of mortgage debts not maturing within five years. The New Jersey legislature, amending the general tax act (Ch. 82), extended the exemption of mortgages on real property from property taxed in New Jersey to property taxed wherever located. The object was to make it practicable for savings institutions to invest in foreign bonds, but its application was later limited to railroad bonds held by savings banks.

A New York act (Ch. 72) provides that the mortgagor or mortgagee of any mortgage which covers property both within and without the state may pay the tax upon the full amount and secure its exemption. The New York "secured-debts" tax law has been superseded by a tax on investments (Ch. 700) constructed along similar lines and also designed to reach securities which have usually escaped the personal-property tax. Under the new law the owner of an "investment" may secure its exemption from the personal-property tax for one or more years, not exceeding five, by paying to the state comptroller a tax of 20 cents on each $100 face value for each year of exemption desired. If not exempted under the law the owner must pay a personal tax without deduction of "just debts" owing him. A new penalty has been added by which investments of decedents not exempted under the old "secured-debts" law or under the present law must pay an additional inheritance tax of five per cent. unless it can be proved that the owner had paid the personal-property tax on it.

Missouri has passed an act (House Bill 406) under which "secured debts" are constituted a "separate and distinct" class of property for taxation, and may be exempted from all other taxation by payment of a low registration tax. An interesting feature of the law is a provision permitting each county, city or town to levy a like tax, the total of which may not exceed the amount levied for state purposes.

The Michigan secured-debts tax has been extended (No. 173) to include public bonds of other cities or countries and their subdivisions. North Carolina has proposed a constitutional amendment (Ch. 119) which exempts from taxation notes and mortgages given for the purchase of a home, not exceeding $3,000 and running not less than five nor more than 20 years, if the interest does not exceed 5½ per cent. A Vermont act (no. 69) permits a mortgagee or assignee of a real-estate mortgage to pay the tax and add it to the debt or obligation secured by the mortgage. By a constitutional amendment proposed in Montana (Ch. 142) mortgages of record on real or personal property within the state are to be exempted.

Other Intangible Personalty.—In view of the fact that most of the trouble with the general property tax relates to intangible property, it is remarkable that so little legislative tinkering was indulged in during the year. Oklahoma levied (Ch. 264) a flat-rate tax on bonds, notes of any duration over eight months and other choses in action. A Minnesota act (Ch. 130) amends the definition of the term "credits" so as to include shares of stock in foreign corporations, the property of which is not assessed in the state. Such property, which has heretofore been subject to the regular property tax at 40 per cent. of its value, will now be listed and assessed as money and credits and taxed at the uniform rate of three mills on the dollar in lieu of all other taxation. A North Dakota law (Senate Bill 55) levies a rate of three mills, in lieu of all other taxes, on money and credits, including stocks and bonds, with no deduction for liabilities. One of the new Kentucky laws (Ch. 4) levies on all money which is deposited in any bank, trust company or national bank, a tax of one-tenth of one per cent. annually in lieu of all other taxes.

Classification of Property.—The

classification amendment in Oregon, though defeated at the general election of 1914 by a vote of 59,206 for to 116,490 against, was approved at the special election of June 4, 1917, by a vote of 62,118 to 53,245. The constitutional requirement that "all taxation shall be equal and uniform" is thus abolished and the way cleared for any kind of reforms in the general property tax that the legislature and the voters may see fit to adopt. The South Dakota legislature submitted a similar proposal (Ch. 161) in an amendment which also empowers the legislature to impose taxes on incomes and occupations, specifically permitting graduated and progressive rates and reasonable exemptions. A Kentucky act (Ch. 8) requires that all laws passed pursuant to the classification amendment adopted in 1915 shall be subject to a referendum upon petition of five per cent. of the votes cast for governor at the last preceding election. In North Dakota, where the classification amendment has been in force two years, an act was passed (Senate Bill 49) dividing into three classes assessable property not subject to gross-earnings taxes or otherwise exempted from the general property tax, each to be assessed at a different percentage of full value.

Corporation Taxes.—No legislation of special significance has been enacted affecting corporations. Perhaps the most important act of the year is the New York tax of three per cent. on the net income of manufacturing and mercantile corporations (Ch. 726). The new tax supplants the personal tax, the capital-stock tax and the annual franchise tax as applied to these two classes of corporations. The act applies to corporations engaged in manufacturing, buying and selling *tangible* personal property. Corporations dealing in stocks and bonds and other intangible property are thus excluded, while other classes of corporations, especially public utilities, are expressly exempted. One-third of the revenue is returned to counties in which the corporations have real and personal property or their principal office in the state.

In Montana (Ch. 79) a tax of one per cent., described as an annual license tax for carrying on business, is levied on the total net income of domestic and foreign corporations received from all sources within the state. West Virginia, in order to provide revenue needed to meet expenses incident to the war, authorized (Ch. 6, Second Extra Session, 1917) an addition, not to exceed one-quarter of one per cent., to the annual special excise tax of one-half of one per cent. levied by the 1915 statute on the entire net income of foreign and domestic corporations derived from business transacted in the state.

In New Jersey persons, corporations, etc., occupying the public streets have heretofore been subject to an annual franchise tax of two per cent. on their gross receipts. A 1917 amendment (Ch. 17) increases the rate of the tax one per cent. a year until the rate reaches five per cent., so that in the future all utility corporations occupying the public thoroughfares will pay the same rate of tax long borne by street-railway corporations. A gross-recipts tax of 2½ per cent. has been levied as a license fee on express corporations doing business in Montana (Ch. 87), and on private-car companies a tax of five per cent. of gross receipts from business done within the state (Ch. 82). In Maine the excise tax on parlor cars is increased (Ch. 210) from six to nine per cent. of the gross receipts from business done wholly within the state.

Missouri has levied (House Bill 800) a franchise tax of three-fortieths of one per cent. of the par value of the outstanding capital stock and surplus of all corporations, both foreign and domestic, employed in the state. The graduated franchise tax on foreign corporations doing business in Texas has heretofore been applied to the entire capital stock, regardless of the amount actually employed within the state. A 1917 amendment (Ch. 85) limits the tax to the authorized capital stock, including surplus and undivided profits, actually employed in the state, the amount so employed to be determined by the ratio of gross receipts from intrastate business to total gross receipts.

A Kentucky amendment (Ch. 7) increases the annual license tax from

30 cents to 50 cents per $1,000 of that part of the authorized capital stock of corporations represented by property owned and business transacted in the state. In Colorado also the rate of license tax has been increased (Chs. 10 and 11, Extraordinary Session). Investment companies in New York are to pay (Ch. 707) a franchise tax of 1½ mills on each dollar of the face value of their capital stock, plus one per cent. of their surplus and undivided profits. North Dakota has heretofore allowed banks to deduct from the par value of their stock, surplus and undivided profits, a sum equal to five per cent. of their loans and discounts. This provision has now been stricken out.

A Supreme Court decision in South Dakota left that state without an adequate law for taxing express, telegraph and sleeping-car corporations. To remedy the situation the legislature passed elaborate statutes (Ch. 120, 121) providing for an ad valorem state tax in lieu of all other taxes, state and local. A new state ad valorem tax, in lieu of other state and local taxes, has been applied to express companies in Oklahoma (Ch. 263) Minor changes have been made in the provisions of the Michigan law assessing an ad valorem tax on telephone, telegraph and other companies in lieu of all other taxes (House Act 208). A Maine law (Ch. 52) specifically includes transmission lines of electric-light and power companies in the list of things taxable as real estate.

Kentucky legislation (Ch. 13) makes numerous changes in the method of determining valuations of the corporate franchises of public-utility corporations, which are taxable as other property for both state and local purposes. The New York franchise tax on corporations having shares without a nominal par value has been amended (Ch. 501) so as to provide for taxation on the basis of "such portion of the *net* assets of the corporation as its gross assets employed in any business within the state bear to its entire gross assets wherever employed".

Taxation of Mineral Resources.—A Kansas law (Ch. 323), expected to be an important source of revenue for local governments, provides for the assessment as personal property of oil and gas leases, oil and gas wells, and equipment used in the development of oil and gas properties. A Kentucky act (Ch. 9) imposes for state purposes a license or franchise tax of one per cent. on the market value of oil produced by any person, firm or corporation in the state. An additional levy of one-half of one per cent. may be made by counties. A constitutional amendment proposed in Utah subjects metalliferous mines to an assessment of $5 an acre in addition to a value based on some multiple or submultiple of the net annual proceeds. Coal and other mines, as well as the value of mining machinery and property, together with surface uses other than mining, are to be assessed at full value

Tax and Debt Limits.—While attempting to stem the tide of rising state expenditures by improved budget procedure and boards of control, the legislatures in a number of states seek to curb local expenditures by limiting tax levies. In one noteworthy California statute (Ch. 729) both a budget procedure and a tax limit are prescribed for local governments. New Jersey has also (Ch. 192) found it necessary to impose a budget system upon municipalities and counties; the same act regulates the borrowing powers of cities. Colorado prohibits (Ch. 114) the levying of more taxes than in the preceding year, plus five per cent., except to provide for the payment of bonds and interest. A Kansas act (Ch. 113) repeals the existing law limiting tax levies in second-class cities and fixes new limits to levies in second- and third-class cities. In Minnesota a new statute (Ch. 106) permits county boards in counties whose assessed valuation does not exceed $5,000,000 to levy for county purposes any amount in excess of existing limitations that may be necessary, not exceeding a rate of eight mills.

The New Mexico legislature has proposed a constitutional amendment (Joint Resolution 15) limiting the tax levies of all local governments to a rate which will produce no more than five per cent. in excess of the amount produced on the same property by the tax levies of the preceding year, except upon the specific authorization of the state Tax Commission. Oregon has repealed (Ch. 150) the 1915 law regulating increases in tax levies from year to year, and now provides for elections upon the question of increasing levies over the amounts otherwise limited by the constitution. A Washington act (Ch. 143) prohibits any tax district from becoming indebted for any purpose to an amount exceeding 1½ per cent. of the last assessed valuation of the taxable property in the district, without the consent of three-fourths of the voters therein at an election held for the purpose. In cases requiring such assent, the total indebtedness of such district may not at any time exceed five per cent. of the last assessable valuation.

Tax Exemption.—A Connecticut statute (Ch. 12), in effect April 11, exempts from taxation in the hands of individuals all United States bonds and all Connecticut and municipal securities issued after April 1, 1917. Vermont, in an "Act to encourage the building of homes" (No. 38), will hereafter exempt from taxation for five years buildings used and occupied exclusively as homes and costing, exclusive of land, not less than $800 nor more than $3,000, provided the town in which such buildings are located so votes. A constitutional amendment proposed in North Dakota (Senate Bill 42) will permit the legislature to exempt from taxation any and all improvements on farm property.

Budget Reform.—State legislatures in 1917 have given more attention than ever before to improvements in budgetary methods (see also V, *State Administration*). The legislature of Delaware by a joint resolution (Ch. 278) requested the governor to submit two complete budgets, one for each of the next two fiscal years, containing a complete plan of proposed expenditures and estimated revenues, accompanied by financial statistics of the preceding biennium, and an estimate of the state's present financial conditions. These recommendations, taking the form of a budget bill, are to enjoy priority over all other motions except a motion to adjourn. The legislature of Illinois provided (H. B. 279) for a biennial budget to be submitted to the governor by the director of finance not later than January 1 (see *ibid.*). The Kansas legislature (Chs. 312 and 316) created a thoroughgoing executive budget system (see ibid.). New Mexico also adopted an executive budget system (Ch. 81), similar in most respects to that of Kansas, and the Utah legislature provided (Ch. 15) an executive budget of the usual type.

While the main trend seems to be toward the executive budget, budget making by boards and commissions more or less free from the governor's control still finds favor with the lawmakers in some states. The South Dakota legislature created (Ch. 354) a State Budget Board consisting of five members, the governor-elect, the chairman of the appropriation committees of the house and senate of the previous session, the state auditor, and the chairman of the tax commission. In Tennessee a State Budget Commission was created (Ch. 139), consisting of the governor, the comptroller, the treasurer, the secretary of state and the auditor. In California a Senate constitutional amendment (No. 15) was passed, to be submitted to the people in November, 1918, creating a State Budget Board to ascertain the needs of state offices, departments and institutions and recommend appropriations. The West Virginia legislature, in its second special session, passed a constitutional amendment (Ch. 15) providing for a complete budget system under control of the Board of Public Works, to be submitted to the voters in November, 1918.

A slight change in the budget machinery of Vermont was made by an act (No. 32) providing that the members of the newly created Board of Control shall be members of the Budget Committee established by the laws of 1915 (No. 26). Adopting a recommendation of the governor, the legislature of Michigan created (Public Acts, 1917, No. 193) a body to investigate budgetary legislation and the finances of the state, to be known as the Michigan Budget Commission of Inquiry, consisting of five members appointed by the governor, with the governor and auditor-general *ex officio*, to report before Jan. 1, 1918. A unique feature of this investigating commission is that the law makes it also a temporary budget board, responsible in a way for making the budget for the next biennial period. The Massachusetts legislature also ordered a joint special recess committee to investigate the state's finances, to prepare a budget for 1919, and recommend budgetary legislation, and to report on the consolidation of departments, boards and commissions.

State and Federal Relations.—A resolution of the California legislature, filed with the Secretary of State on Jan. 27, recited that the Federal Government, by embracing sources of revenue not heretofore used by it, is encroaching on the states' sources of revenue, and that a line separating the two can equitably and logically be drawn. A congress of state legislatures is therefore proposed to consider the problem, with the object of adopting and urging upon Congress a definite policy of segregation of the sources of state and Federal revenue. This item, originating with the California Tax Commission, has been endorsed by many of the 1917 legislatures in language following closely that of the California resolution. On account of the war no immediate action is to be taken.

BANKING AND CURRENCY

RAY B. WESTERFIELD

The Currency.—The most noteworthy statistical changes during the year Oct. 1, 1916, to Oct. 1, 1917, in the currency situation are the following:

(1) An increase of 400 millions in the gold coin and bullion, 93 millions of which increase are circulated by additional gold certificates.

(2) A very large concentration of gold certificates into the Gold Settlement Fund; of 528 millions of gold certificates held by the Federal reserve banks and Federal reserve agents against the issues Federal reserve notes, 256 millions were in the Gold Settlement Fund, and of the total of gold certificates in circulation, 1,613 millions, there were 342 millions in this Fund.

(3) A very considerable increase, 14 millions, or about seven per cent., in the subsidiary silver coinage, and 24 millions in the subsidiary silver in circulation, the United States Treasury having been practically exhausted of its supply.

(4) An enormous increase, 494 millions, or 233 per cent., in the volume of Federal reserve notes in circulation.

(5) A further decline of 16 millions in the national-bank note circulation.

(6) A grand total increase of 642 millions, or 13 per cent., in the money in circulation.

(7) A rise in the *per capita* circulation from $40.62 to $46.10, or 13.4 per cent.

STATEMENT OF THE CURRENCY, 1916–17

Forms of Currency	General Stock of Money in the United States (millions)		Held in the Treasury as Assets of the Government (millions)		Held by F. R. Banks and Agents against F. R. Notes (millions)		Money in Circulation (millions)	
	Oct. 1, 1916	Oct. 1, 1917	Oct. 1, 1916	Oct. 1, 1917	Oct. 1, 1916	Oct. 1, 1917	Oct. 1, 1916	Oct. 1, 1917
Gold coin (including bullion in Treasury)	$2,636.0	$3,035.4	$275.6	$196.4	$10.6	$4.2	$644.9	$693.6
Gold certificates	......	......	....	....	184.2	528.2[1]	1,520.7	1,613.1[2]
Standard silver dollars	568.3	568.3	13.6	15.4	....	....	69.5	73.9
Silver certificates	......	......	....	....	....	....	483.1	477.0
Subsidiary silver	189.9	204.0	11.4	1.9	....	....	178.5	202.1
Treasury notes of 1890	......	......	....	....	....	....	2.1	1.9
United States notes	346.7	346.7	4.2	5.8	....	....	342.4	340.9
Federal-reserve notes	215.2	711.9[3]	2.7	5.1	....	....	212.5	706.8
Federal-reserve bank notes	10.0	12.4	....	....	....	....	9.9	12.3
National bank notes	733.3	716.6	18.6	17.7	....	....	714.7	698.9
Total currency	$4,699.4	$5,595.4	$326.1	$242.5	$194.8	$532.4	$4,178.5	$4,820.5
Per capita circulation	......	......	....	....	....	....	$40.62	$46.10

[1] Includes $255.7 millions Federal Reserve Gold Settlement Fund deposited with the United States Treasurer.

[2] Includes $341.7 millions Federal Reserve Gold Settlement Fund deposited with the United States Treasurer.

[3] Does not include Federal-reserve notes held by the Federal reserve banks.

Probably the most spectacular movement bearing upon the currency has been the course of the price of silver. Throughout the war period the price has been rising. Taking the London quotations as the best index, the prices there per ounce were:

	High	Low
1914	27¾d.	22⅛d.
1915	27¼d.	22½d.
1916	37⅛d.	26 11/16d.
1917	55 d.	36 d.

On July 31, 1914, the New York price was 44⅜ cents. The year's high record was reached at New York on Sept. 21-25 at $1.08½ per ounce, after which date it fell to $0.83⅞ by Oct. 19. The causes of the rise are the increase in the general price level, the decrease in the world's product due to the Mexican chaos and other factors, the abnormal demand from belligerent Europe for coinage purposes to replace the old silver and gold coins which have been hoarded or concentrated in bank reserves or forced out of circulation by depreciated paper currencies, the heavy exportations of silver to India in settlement of increased trade balances, increased costs of ocean transportation, etc. The effects of the rise have been: (1) to raise the value of the silver content of the silver dollar, and, should the price reach $1.29 per ounce, make the market ratio of gold to silver values conform with the mint ratio 16:1; (2) to create a condition favorable to and a demand for relieving the United States Treasury of its great hoard of silver dollars by exporting them to the Orient in adjustment of trade balances, thus defending our gold reserves; (3) to reduce the government seigniorage on subsidiary silver coinage, and induce it to change its mint regulations so as to buy silver on a basis of fineness instead of on the basis of the value of its silver content; and (4) to accelerate exporting to China by the rising silver exchange. The fall in the price of silver in October was caused chiefly by a speculative reaction from too inflated prices and an embargo laid by the United States upon silver exports except those which were permitted by the Federal Reserve Board. (See also XVII, *Gold and Silver.*)

A second feature has been the increased demand for subsidiary and minor coins and small bills. The Mint is being operated night and day at maximum output and yet the Treasury stock of these coins stays exhausted and the demand is unsatisfied. From July 1, 1915, to Jan. 1, 1917, the $1 and $2 silver certificates increased from 234.6 millions to 284.8 millions, principally by the conversion of silver certificates of denominations of $10 and above. In February, 1917, the Secretary of the Treasury invoked for the first time the provisions of the Act of March 4, 1907, which authorized him to issue United States notes of small denominations and cancel an equal amount of large denominations whenever, in his opinion, the outstanding silver certificates of $1, $2 and $5 denominations are not sufficient to meet the public demand therefor. The increased demand for small-denomination money is due to the rising price level, the great trade activity and the growing population.

Section	Number of Banks			Resources (millions)			Capital, Surplus and Undivided Profits (millions)		
	Sept. 12, 1916	Sept. 11, 1917	Change	Sept. 12, 1916	Sept. 11, 1917	Per cent. Change	Sept. 12, 1916	Sept. 11, 1917	Per cent. Change
New England	414	403	−11	$1,106	$1,186	+7.2	$199	$207	41.1
Eastern states	1,647	1,644	−3	5.948	6,858	+15.3	669	847	26.6
Southern states	1,588	1,583	−5	1,589	1,891	+19.0	317	323	1.9
Middle states	2,111	2,114	+3	3,767	4,230	+12.3	516	545	5.6
Western states	1,296	1,349	+53	978	1,182	+20.9	124	133	8.8
Pacific states	526	541	+15	1,013	1,187	+17.1	152	155	1.9
Island possessions	7	4	−3	7	6	−14.4	1	1	.....
Total	7,589	7,638	+49	14,411	16,543	+18.6	1,981	2,211	11.6

THE BANKING SYSTEM

The National Banking System.—Viewed from practically every point, the national banking system has enjoyed a prosperous year. The number of national banks reporting to the call of Sept. 12, 1916, was 7,589, and to that of Sept. 11, 1917, was 7,638, an increase of 49. The sectional distribution on these dates was as given on the preceding page.

The shifts in the various items of resources and liabilities of the national banks combined between these dates were as follows:

	Sept. 12, 1916 (millions)	Sept. 2, 1917 (millions)	Per cent. Change
Resources:			
Loans and discounts	$7,859	$9,055	+15.5
United States bonds	729	1,159	+58.8
Other bonds and securities	1,624	1,863	+14.7
Due from Federal reserve banks	531	1,046	......
Due from approved reserve agents[1]	936		
Net amount due from National banks	......	1,292	......
Net amount due from other banks, bankers and trust companies	......	341	......
Cash	768	493	−35.7
Customers' liability under letters of credit	77	29	−62.3
Customers' liability under acceptances	77	133	+72.7
Other assets	1,729	1,432	−33.8
Total	$14,411	$16,543	+14.8
Liabilities:			
Capital, surplus and undivided profits	$2,116	2,213	+4.6
National banknotes outstanding	674	665	−1.3
Due to banks and bankers	2,915	3,048	+4.5
Individual deposits	8,445	9,976	+18.1
Letters of credit	81	36	−55.5
Acceptances based on exports and imports	76	138	+81.6
Other liabilities	102	467	+35.80
Total	$14,411	$16,543	+14.8
Liabilities for re-discounts	......	169	......

[1] Since the amendment of June 21, 1917 (see *infra*), the only approved reserve agents are the Federal reserve banks; this item, therefore, combines with the item above.

Among the changes in resources attention may be called to the 15.5 per cent. increase in loans and discounts and the very remarkable 58.8 per cent. increase in the United States securities held; the Liberty Loans and the subscriptions to Treasury certificates of indebtedness have caused an unusual investment in government securities, far outstripping the growth in investments in short-term commercial instruments. The growth in acceptances is a satisfactory proof of the increasing occupation of our banks in foreign trade and of the increasing use of acceptances in our business system. The table also brings out the shifts in the location of the reserves as forced by the amendments of June 21.

The distribution of reserves of national banks, and the percentage carried and required, and the total excess reserves on Sept. 11, 1917, are indicated in the following table:

	Held		Required[1]		Excess (millions)
	Millions	Per cent.	Millions	Per cent.	
By banks in central reserve cities	$432	14.04	$376	13.0	$56
By banks in reserve cities	291	10.33	282	10.0	9
By country banks	322	7.39	305	7.0	17
Total	1,045	....	963		82

[1] By amendment of June 21, 1917 (*see infra*), the required reserves against demand liabilities were reduced on time deposits from 5 to 3 per cent.

All reserves thereafter were to be carried in the Federal reserve banks; the bank could keep what till money it found expedient.

Spirited effort has been made throughout the year to get the state banks to enter the Federal reserve system. The "Official Bulletin" in June declared that less than 100 state banks and trust companies had entered and urged the vital importance of having a single system at this time of national crisis. According to data compiled by the Federal Reserve Board at that time, 41 of the 48 states either expressly or impliedly authorize state banks and trust companies to enter, but in some few of those states deposits with Federal reserve banks do not count as part of the reserves as required by the state laws. On Oct. 13 President Wilson issued an appeal to the state banks to join. Probably the greatest inducements offered the state banks, however, were the amendments of June 21, 1917 (see *infra*), and an opinion expressed by the Attorney-General that the sections of the Clayton Act against interlocking directorates do not apply to state bank members. The result of pressure, appeal and inducement has been the filing of a large list of applications to join by the biggest New York and other state institutions, and in the West and in certain cities a demand by banks whose capitalization is too small to make them eligible to admission that permissive legislation be passed. The beginnings of the movement are propitious.

As stated in the YEAR BOOK for 1916 (p. 361), the Supreme Courts of Illinois and Michigan declared unconstitutional Section 11K of the Federal Reserve Act, which conferred upon national banks the right to exercise trust powers when not denied by state law and when approved by the Federal Reserve Board. The Michigan case (Bay City Bank *vs.* Fellows) was carried on appeal to the United States Supreme Court, which on June 11, 1917, fully sustained the action of Congress, on the grounds that all

RESOURCES AND LIABILITIES OF INSTITUTIONS UNDER STATE CHARTERS, JUNE 20, 1917

(*In Millions of Dollars*)

	State Banks	Mutual Savings Banks	Stock Savings Banks	Loan & Trust Companies	Private Banks	Total Banks
Number reporting	(a) 15,968	622	(b) 1,185	(c) 1,608	936	20,319
Resources:						
Loans and discounts (including overdrafts)	4,111	2,368	763	4,311	118	11,674
Investments (bonds, securities, etc.)	890	2,131	159	1,769	19	4,990
Banking houses (including furniture and fixtures)	175	39	30	153	7	406
Other real estate owned	38	22	5	37	3	107
Due from banks	1,078	213	133	870	39	2,335
Checks and other cash items (including exchanges for clearing house)	138	.....	1	86	1	228
Cash on hand	319	29	31	363	6	749
All other resources	47	5	1	288	1	344
Total resources	6,799	4,811	1,127	7,899	197	29,836
Liabilities:						
Capital stock paid in	600	.....	69	505	16	1,191
Surplus fund	288	321	30	534	7	1,183
Undivided profits	108	58	24	107	3	301
Due to banks	274	.....	3	608	1	888
Dividends unpaid	.....	.....	.....	1	.....	2
Individual deposits	5,390	4,422	995	5,797	161	16,768
Postal Savings Deposits	5	.....	.....	6	.....	12
Notes and bills rediscounted	18	.....	.....	8	.....	28
Bills payable	51	.....	.....	28	3	84
Other liabilities	60	7	3,920	302	2	376
Total liabilities	6,799	4,811	1,127	7,899	197	20,836

(*a*) Includes stock savings banks for 13 states and trust companies for 8 states.
(*b*) Stock savings banks for 13 states included with State Banks.
(*c*) Trust Companies for 8 States included with State Banks.

powers necessary to the stability and successful operations of national banks are enjoyed by Congress, and that the additional business functions authorized by this clause were ordinary commercial and financial operations necessary to preserve the business of national banks in competition with state banks and trust companies. Some 44 states have conferred this power upon national banks and the Board has granted it to some 400 banks in these states.

State, Savings and Private Banks, Loan and Trust Companies.—According to their reports to the Comptroller of the Currency on June 20, the institutions under state charters numbered 20,319, showing an increase of 385 in numbers reporting and 2,492 millions in resources during the fiscal year. The following table presents the main items in their financial statements:

Postal Savings System.—On September 30, 1917, there were in the United States, according to estimates of the Third Postmaster General, 710,000 postal-savings depositors, with total deposits of 143,200,000. The deposits show a considerable increase, despite the disadvantageous position of such deposits brought about by the Liberty loans and the war savings-certificates plan offering better interest rates and the same security (see Public Finance, *supra*).

The growth of the Postal Savings system was much promoted by the removal of restrictions on deposits by amendment of May 18, 1916, which removed altogether the monthly limit on deposits of $100, and by increasing the amount that a depositor may have to his credit from $500 to $1,000. During the fiscal year ending June 30, 1917, the gains were as follows:

	June 30, 1916	Dec. 30, 1916	June 30, 1917
Total depositories in operation	8,421	8,402	7,161
Balance to credit of depositors	$86,000,000	$112,000,000	$131,000,000
Number of depositors	602,937	661,911	674,728
Average principal per depositor	$142.67	$169.45	$195.57
Balance on deposit in banks	$80,000,000	$106,000,000	$126,000,000

The rank of the leading States in number of depositors as of June 30, 1917, was:

New York	239,475
Pennsylvania	58,882
Illinois	40,204
Ohio	39,347
Massachusetts	33,012
New Jersey	27,628
California	23,755
Michigan	23,609
Connecticut	19,173
Washington	17,258

The number of banking institutions qualified as depositors for postal savings funds as of June 30, 1917, was:

National banks	3,486
State banks	1,274
Savings banks	242
Trust companies	568
Organized private banks	13
Total banks	5,583

During the fiscal year there were two issues of Postal Savings Bonds:

Issue	Dated	Registered	Coupon	Total
12th	January 1, 1917	$799,560	$86,400	$887,960
13th	July 1, 1917	686,260	32,540	718,800
Total issues to July 1, 1917		$9,440,460	$1,318,100	$10,758,560

On Sept. 30, 1917, there were 15 cities with postal deposits that exceeded $1,000,000.

The latter were (in millions): New York, 29.7; Brooklyn, 9.5; Chicago, 6.9; Detroit, 4.2; Boston, 3.0; Pittsburg, 2.7; Cleveland, 1.8; Philadelphia, 1.7; Portland, 1.6; Milwaukee, 1.5; San Francisco, 1.3; Newark, 1.3; Seattle, 1.3; St. Louis, 1.3; Toledo, 11.

The severance of diplomatic relations with Germany on Feb. 3 caused some alarm among foreign-born depositors in a few cities lest their postal savings might be seized by the Government in the event of war. Withdrawals increased temporarily at some post offices and occasioned an announcement by the State Department on Feb. 8 that the Government had no intention of seizing bank deposits or other property belonging to any foreign-born subject, even in the event of war. The twelfth issue of

United States 2½ per cent. postal-savings bonds in April brought the total up to $10,000,000, of which 87 per cent. are registered and 13 per cent. coupon bonds; more than 30,000 postal-savings depositors have converted all or part of their savings into bonds. By resolution of March 30 of the Board of Trustees of the Postal Savings System, the regulations governing the deposit of postal-savings funds in banks have been extended so as to include farm loan bonds in the list of bonds acceptable as security therefor, and by resolution of April 24, to include interest-bearing certificates of indebtedness of the U. S. Government. According to the accounting methods of the Postal Savings system the postal savings banks showed a good profit for the fiscal year:

Interest received from banks	$2,650,698
Interest received from bonds	52,446
Miscellaneous receipts	111
Total receipts	$2,703,255
Interest allowed and entered to credit of depositors	$1,274,261
Allowances to postmasters for losses due to fire and burglary	3,577
Extra expense incident to the operation of the system	469,786
Total expenditures	$1,747,625
Net profit	$955,630

Farm Loan Banks.—The Federal land-bank system created in 1916 (*A. Y. B.*, 1916, pp. 363, 452) has been well established during the year. The United States subscribed $8,800,000 of the $9,000,000 capital stock, and the Farm Loan Board appointed temporary directors, land appraisers and registrars, and set the banks going. Up to July 15 there had been chartered 432 farm-loan associations and the total of loans taken by these was $20,699,337.45. The rank of the ten states taking the greatest amount of loans was:

Texas	$2,112,000	Washington	$849,000
California	1,774,000	New Mexico	809,000
Oklahoma	1,448,000	Montana	758,000
Colorado	1,358,000	Maine	701,000
Kansas	1,134,000	Tennessee	685,000

Contrasting these amounts with those for New York ($31,000), New Jersey ($24,000), Massachusetts ($85,000), Maryland ($41,000), etc., it is quite evident that the demand is western and southern although some business was done even in states where farm-loan interest rates are always low and a large business in certain states of high land values, as Kansas, Illinois, Indiana, etc. On June 29 the Springfield (Mass.) Federal Land Bank reported that it had received 500 applications for loans from 39 associations, amounting to $1,750,000; the Springfield district is the heart of the low-interest territory and the success of this bank was deemed most problematical. The Louisville (Ky.) Bank has established a branch at Cleveland to facilitate its business in the northeastern Ohio counties. The system has been handicapped by certain state legal restraints, as, for example, the homestead law of Texas.

Late in April a portion of the deposits of the postal savings banks was made available to help farmers meet the war food crisis, and farm-loan bonds, issued under the Federal Farm Loan Act, were made acceptable at par to secure such deposits. Several states in which such laws did not already exist made farm-loan bonds lawful investments for trust funds and savings banks. The constitutionality of the tax-exemption feature of the Farm Loan Act (Sec. 26) was upheld in an opinion made public on Feb. 11 by Attorney-General Gregory.

The first issue of farm-loan bonds bear date May 1, 1917; the term is 20 years, but they are redeemable at par and accrued interest on any interest date after five years from date of issue. They are coupon bonds, exchangeable for registered, issued in denominations of $1,000, $500, $100, $50 and $25. Interest is payable semi-annually at five per cent. The bonds are exempt from Federal, state and local taxation. One-half of the issue was handled by a syndicate of four investment houses which put them out at 101⅛; the other half was sold directly by the banks to investors in their respective districts.

FEDERAL RESERVE SYSTEM

The Federal Reserve Banks.—A consolidated statement of the 12 Federal reserve banks at the end of October of 1916 and 1917, is as follows:

	Oct. 19, 1917 (millions)	Oct. 20, 1916 (millions)
RESOURCES:		
Gold coin and certificates in vault	$419.0	$261.0
Gold settlement fund	369.0	121.0
Gold with foreign agencies	52.0	....
Total gold held by banks	$841.0	$382.0
Gold with Federal reserve agent	618.0	215.0
Gold redemption fund	11.0	1.0
Total gold reserves	$1,471.0	$599.0
Legal tender notes, silver, etc.	48.0	10.0
Total reserves	$1,520.0	$610.0
Bills discounted for members	286.0	21.0
Bills bought in open market	171.0	82.0
Total bills on hand	$458.0	$104.0
U. S. Government long-term securities	55.0	41.0
U. S. Government short-term securities	47.0	11.0
Municipal warrants	0.2	32.0
Total earning assets	$560.0	$189.0
Due from other Federal reserve banks, net	32.0	30.0
Uncollected items	332.0	....
Total deductions from gross deposits	$364.0	$30.0
Five per cent. redemption fund against Federal reserve bank notes	0.5	0.4
All other resources	1.0	2.0
Total resources	$2,447.0	$833.0
LIABILITIES:		
Capital paid in	61.0	55.0
Government deposits	76.0	26.0
Due to members, reserve account	1,230.0	....
Due to non-members, clearing account	42.0	....
Member bank deposits, net	....	538.0
Collection items	210.0	....
Total gross deposits	$1,559.0	$619.0
Federal-reserve notes in actual circulation	815.0	212.0
Federal-reserve bank notes in circulation, net liability	8.0	1.0
All other liabilities including foreign Government credits	7.0	0.4
Total liabilities	$2,447.0	$833.0
Gold reserve against net deposit liabilities	70.4%	65.0%
Gold and lawful money reserve against net deposit liabilities	74.5%	66.8%
Gold reserve against Federal-reserve notes in actual circulation	77.3%	102.2%

The table at the bottom of the following page gives the distribution of the chief items among the 12 banks as of Oct. 19, 1917.

Investments and Earnings.—The total investment operations, exclusive of purchases of United States certificates of indebtedness, of the 12 Federal reserve banks for the eight months ending Aug. 31, 1916, and 1917 were as follows:

	Eight Months Ending	
	Aug. 31, 1916 (millions)	Aug. 31, 1917 (millions)
Members' bills discounted	$100.1	$1,640.8
Bills bought in open market—		
Bankers' acceptances	183.8	400.9
Trade acceptances	8.9	16.6
Total	192.7	517.5
Municipal Warrants	64.4	15.3
United States Bonds and Treasury Notes	43.1	41.9

The most remarkable features of this table are the 16-fold increase in the volume of rediscounts and nearly three-fold increase in open-market purchases of bills and the falling off in purchases of municipal warrants. Of the rediscounts the distribution among the banks was, in millions:

Boston	$146.4	Chicago	$ 89.8
New York	882.8	St. Louis	47.8
Philadelphia	111.2	Minneapolis	40.7
Cleveland	55.8	Kansas City	52.7
Richmond	150.2	Dallas	18.8
Atlanta	22.4	San Francisco	21.3

Of the total of 1,640.8 millions, New York rediscounted more than half, and established herself as the pre-eminent discount market. The war finance operations have caused the volume of rediscounts to fluctuate violently. The actual entrance of the United States into the war had been anticipated and the earning assets had been reduced from 221.9 millions at the beginning of the year to 168.0 at the beginning of the war. Rediscounting continued at its low level until April, but the Liberty Loan in June and tighter money market thereafter occasioned tremendous increases in rediscounts, particularly with the Federal Reserve bank of New York, as appears from the table on the following page.

	Rediscounts (millions)	
	Total	With New York Bank
January	$18.3	$ .6
February	22.4	1.9
March	26.7	3.1
April	50.1	2.4
May	91.4	6.5
June	750.3	552.9
July	460.7	262.4
August	220.8	53.0

Of the 7,625 member banks during the first quarter of 1917 the Federal reserve banks discounted bills for 522; and of the 7,657 banks, 1,185 were accommodated during the second quarter. The system is therefore gaining in popularity as a source and method of borrowing. The doubling of the volume of trade acceptances bought gives satisfactory testimony to the effectiveness of the campaign being waged to substitute the trade-acceptance system for the open-account, cash-discount system characteristic of American business.

In June, 1917, all the Federal reserve banks except Boston declared dividends; the banks at New York, Philadelphia, Cleveland and St. Louis cleared their dividend arrears for 1915, but the San Francisco bank still owes for the third quarter of that year. The Richmond bank was the only one on June 30, 1917, without dividend arrears. The total earnings of the 12 banks for the first eight months of 1917 were $5,998,000, of which 29.5 per cent. were earned on members' discounts, 44.6 per cent. on bills bought in the open market, 22.4 per cent. on United States bonds and Treasury notes, and 3.4 per cent. on municipal warrants. Of these sources, discounts were the most profitable investment, averaging nearly four per cent. if calculated to an annual rate. The average earning assets for the time were $288,000,000.

Bond Conversions. — Compulsory bond purchases have been inconsequential. On Jan. 9 the Federal Reserve Board advised the 12 Federal reserve banks that it would not require them to purchase during the year 1917 more than $15,000,000 of United States bonds offered for sale by member banks through the Treasurer of the United States. The total offerings in the first quarter amounted to $10,877,500 and were apportioned among the banks (except of San Francisco) on the basis of capitalization. In the second quarter only $1,279,000 of the two per cent. bonds were offered, and in view of all conditions, the Board on June 26 voted not to require the Federal reserve banks to purchase any bonds this quarter. The committee in charge of the sales of the United States 30-year three per cent. bonds into which the two per cents are converted by the Federal reserve banks received no satisfactory bids for their offerings and consequently no awards were made. The market for these three per cents was cut off by the issue of the three and one-half and four per cent. Liberty loans.

Gold Settlement Fund.—The great fiscal operations in connection with the war financing have given great volume to the items of the Gold Settlement fund, as indicated by the fol-

Bank	Total Gold Reserve (millions)	Members' Bills Discounted (millions)	Bills Bought in Open Market (millions)	Total Earning Assets (millions)	Total Resources (millions)	Total Deposits (millions)	Federal Reserve Notes in Circulation (millions)
Boston	$80.2	$10.7	$24.3	$38.3	$150.9	$98.8	$46.2
New York	575.9	127.6	81.9	218.2	900.6	605.5	279.5
Philadelphia	92.2	10.1	14.3	28.0	169.3	105.5	58.2
Cleveland	104.0	12.9	16.1	41.7	172.4	109.9	55.9
Richmond	62.1	11.1	5.3	20.1	105.3	60.6	41.1
Atlanta	51.1	9.5	1.9	21.5	94.4	48.1	43.8
Chicago	201.9	36.6	7.6	71.1	319.4	202.8	108.4
St. Louis	56.5	18.0	2.8	24.9	107.7	67.8	36.6
Minneapolis	57.9	8.7	2.3	15.1	89.9	49.0	38.4
Kansas City[1]	71.1	20.3	1.7	33.2	131.9	87.0	33.4
Dallas	47.4	9.0	7.7	23.4	93.4	50.1	40.5
San Francisco	71.1	12.0	5.4	25.2	123.8	86.7	33.1

[1] This bank has $8,000,000 Federal reserve bank notes in circulation, and this represents the total outstanding issue of such notes.

lowing statement of total clearings, including transfers:

	(millions)
1915, from May 20	$1,052
1916	5,633
1917, to Sept. 20	16,140
Total	$22,827

The total changes of ownership of gold from May 20, 1915, to Sept. 20, 1917, were 415 millions, which equal 1.82 per cent. of the obligations settled. The total balance in the Fund on the latter date was 382 millions, which together with the 228 millions in the Federal Reserve Agents' Fund, totals 610 millions. The system of handling the Fund at Washington by means of the issue and transfer of gold certificates of $10,000 denominations proved so awkward and unwieldy that an amendment to the Federal Reserve Act was passed on June 21 permitting the Treasurer of the United States to open an account with the Federal Reserve Board, giving credit to the Board for the sum of the deposits of the Federal reserve banks and Federal reserve agents; the individual accounts are kept, as heretofore, by the Federal Reserve Board. Payments out of the fund are by check drawn upon the Treasurer by the Board.

Provision was made by the Board in May for special forms of drafts on Federal reserve banks known as "Federal-reserve transfer drafts" and "Federal-reserve exchange drafts". Drafts drawn by member banks on their own Federal reserve banks, immediately available at par at any Federal reserve bank but actually payable only at the Federal reserve bank on which drawn, are, for the present, limited to sums not exceeding $250. Transfer drafts payable on advice at any Federal reserve bank specified are limited to sums in excess of $250. Advice to the drawee Federal reserve bank by the member bank is required in either case.

Clearings and Collections.—The total clearings of the country have shown very remarkable changes since the war opened (see also XII, *Economic Conditions*). The first week of October, 1917, was the first week in the past three years to show a decrease of clearings as compared with the same week the year before, and the increase for the week ending Oct. 20 was only 2.4 per cent. Taking into consideration the huge checks now being drawn by the Government in connection with its financial operations and the higher prices at which most commodities are selling, a very substantial diminution in the physical volume of trade is evident. The practice of paying their daily Clearing-House balances with checks on the Federal reserve bank, instead of settling in currency or trading balances or other methods, has been adopted by the Clearing Houses of New York, Boston, Chicago, San Francisco and other cities.

The par-collections system established on July 15, 1916 (*A. Y. B.*, 1916, p. 367), has been extending slowly against the very active resistance of the country banks. From a total of some 133,000 items amounting to 59 millions in the first month of operation, par collections had increased to 251,000 items, amounting to 182 millions in the month ending Sept. 15, 1917. The Federal Reserve Board has adhered rigidly to its policy of forcing the general adoption of par collections. The loss of exchange charges has caused the bitterest opposition to the plan, and has been the greatest deterrent to the entrance of the state banks into the Federal reserve system. Remedial legislation permitting reasonable exchange charges was introduced into Congress but amendments before enactment deprived it of its vital force (see *infra*). Another amendment related to collection operations authorizes, but does not require, the Federal reserve banks to receive deposits from nonmember banks and to agree with such banks to maintain a balance sufficient to cover checks drawn against the depositing bank as well as items received from that bank.

Gold Movements.—The volume of foreign trade has continued to increase and the favorable balance on June 30 reached the unprecedented figure of 3,634 millions (see also XII, *Economic Conditions;* and XIX, *External Commerce*). The gold movement resulting from this balance of trade and international war finance has been most voluminous and interesting (see also XII, *Economic Conditions*). The total net balance of imported gold for the year up to November 16 was 187 millions. The total gold imports were averaging about 100 millions per month until the United States entered the war, but for the first months of the war gold imports practically ceased, the loans which our Government made to the Allies (see *Public Finance, supra*) rendering specie shipments less necessary. From mid-June to mid-July, however, 130 millions more were sent by England to ease our money market. This became necessary because, among other factors, the gold exportations to neutrals of Europe, Spanish America and the Orient to cover adverse balances, increased greatly, and averaged about 50 millions monthly after our entrance into the war. This outward gold movement reached 331 millions by Sept. 14. On Sept. 7 President Wilson proclaimed an embargo, effective Sept. 10, on gold exports except under license of a special body of experts on foreign exchange and banking. Licensing of exports of both gold and other products have provided means of controlling and stabilizing foreign exchanges and, at the same time, of controlling the destination and use of our exported goods and of defending our gold reserves. (See also XII, *Economic Conditions*).

The Banks and War Finance.—The banks, although almost overwhelmed with work connected with the financial operations of the Government, have performed these services with the highest patriotism and diligence. Chief among them has been the organization and conduct of bond-selling campaigns in connection with the Liberty loans (see *Public Finance, supra*). The regular bond houses gave their costly organizations wholly to the first loan without charge, and performed an indispensable service in acquainting the people of the United States with the nature of bonds and in training others to sell bonds. Outside of the larger cities, where the bond houses took the lead, the banks were generally in charge of the selling organization. On May 14 the Secretary of the Treasury designated the Federal reserve banks as the fiscal agents of the United States in the handling of the Liberty Loans. Each of the 12 banks developed a selling organization on the basis of the Federal reserve district, and the process of subdivision and organization was carried out until local committees permeated the whole nation. The general committee, in each district, known as the Liberty Loan Committee, appointed by the governor of the Federal Reserve Bank, organized subcommittees, on distribution, publicity, budget, bond department, etc., and the subcommittees organized still other committees on small bonds, services of organized bodies of women, employers, etc. Many workers from banks in the financial districts were loaned to the Liberty Loan Committees by their institutions and gave their full time to its work. The American Bankers' Association, through its War Loan Committee, has taken a very active part in getting local organizations of its members established, procuring speakers, enlisting the services of employers, etc.

The successful operation of the Federal reserve system in handling the Liberty Loan flotations, of unprecedented size and scope in the financial history of the United States, is probably the most striking demonstration of the usefulness and capacity of the new system. The *Federal Reserve Bulletin* of July summarizes the ways in which the Federal reserve banks facilitated the Liberty Loan as follows:

> (1) The establishment of a 3 per cent. rate for the discount at the Federal reserve bank of the direct 15-day obligations of member banks, secured by treasury certificates of indebtedness. These certificates were issued at 3 and 3½ per cent. per annum.
>
> (2) The establishment of a discount rate at the Federal reserve bank of 3½ per cent. for customers' 90-day notes rediscounted with the endorsement of member banks, when such notes had been originally given for the purpose of securing funds for the purchase of bonds.
>
> (3) The general grant of permission to member banks to act as agents of non-member banks in rediscounting until further notice the notes of the latter at the Federal Reserve Banks in order to obtain funds to facilitate the operations of such non-member banks in government bonds.
>
> (4) The establishment of a "one-day rate" of from 2 per cent. to 4 per cent.

for use in financial centers, chiefly New York, for the purpose of restoring to the market funds temporarily withdrawn through government loan operations.

(5) Provision that non-member banks' notes might be discounted at the Federal reserve banks with the endorsement of a member bank on the same basis as customers' notes (that is, running up to 90-days maturity) on condition that such notes should be rediscounted only up to July 15, provided that the notes were accompanied by an affidavit that the proceeds thereof had been used for the purchase or carrying of bonds.

(6) General assurances to saving banks and trust companies that the Board desired in every way to coöperate with them in avoiding shock or disturbance to existing conditions; and that the system stood ready further to extend through member banks reasonable accommodation at Federal reserve banks for the purpose of protecting the interests of such savings banks and trust companies in the event of necessity resulting from withdrawals made by depositors in order to purchase or invest in government bonds.

The individual banks facilitated subscriptions in various ways, for example, by the partial-payment plan, the bank making the subscription and allowing its customers to buy and pay by regular partial payments, and by loans to purchasers and others, when secured by Liberty Loan bonds, at rates not higher than ½ per cent. above the Federal-reserve bank rate for rediscounts, or at a rate no higher or slightly higher than the bonds bore.

The banks have regularly oversubscribed bi-weekly issues of short-term certificates of indebtedness placed upon the market by the Treasury Department in anticipation of the sales of bonds. These issues have offered the banks a profitable investment for their spare funds and have stabilized the money market by the even flow of funds in and out of the banks despite the flotation of enormous loans. The Secretary of the Treasury on May 26 inaugurated the policy of redistributing among subscribing banks a portion of the proceeds of these certificates of indebtedness, subject to call and at an interest rate of two per cent., and this plan was extended into the distribution of the proceeds of the Liberty Loan when instalments were paid. Section 7 of the Liberty Loan Act exempted government deposits from the regular reserve requirements.

BANKING LEGISLATION

Federal Legislation.—A considerable body of banking legislation which failed of passage in the final session of the Sixty-fourth Congress was passed under pressure of war finance on June 21. The principal amendments to the Federal Reserve Act were as follows:

(1) *As to establishment of branches.*—The Federal Reserve Act has lacked clearness as to whether the Federal Reserve Board could direct the establishment of branches or must wait for the initiative to come from the Federal reserve banks. The new law authorizes the Board to require the establishment of branches, subjects such branches to such rules and regulations as the Board may provide, and empowers the Board to appoint one less than half of each branch directorate. During the year branches of Federal reserve banks have been established at Spokane, Omaha, Baltimore and Denver. It may be said at this point that the Federal Reserve Bank of New York, with the approval of the Board, arranged during the early part of the year to make the Bank of England and the Bank of France its agencies in those countries, and in the weekly statement of June 23 there appeared for the first time the asset item, "gold held with foreign agencies". The Federal Reserve Bank of San Francisco also arranged agencies with the Bank of the Philippines at Manila and correspondents at Hongkong, Yokahoma and Melbourne.

(2) *As to appointment of Federal reserve agents' deputies.*—Since under the old law the deputy federal reserve agent had to have the qualifications and responsibilities and work of the Federal reserve agent but got only the salary of a director, it was practically impossible to attract men of caliber to the office. The amendment makes the office of "deputy agent" that of "deputy chairman" of the board of directors, and empowers the Federal reserve agent, subject to the approval of the Board, to appoint as assistants persons of tested banking experience, to be paid by the Federal reserve bank competent salaries, as determined by the Board.

(3) *As to admission of State banks and trust companies.*—The state banks have objected to entering the Federal reserve system because of what were alleged to be arbitrary regulations of the Board and because of certain limitations on the activity of member banks. They asked that the regulations be made law and that they be exempted from the limitations. Congress yielded to the state banks' insistency as follows: (*a*) Most of the existing regulations of members as to admission, stock subscriptions, reserves, reports, examinations, etc., were put into form of law. (*b*) Examinations are to be conducted under the Federal reserve bank rather than the Comptroller of the Currency and that bank might, at its discretion, ac-

cept the state bank examiner's reports in lieu of examinations by its own examiners. (*c*) State-bank members are permitted to withdraw at will after six months' notice filed with the Board. (*d*) The state banks are permitted to retain, subject to the amended Federal Reserve Act and the necessary regulations of the Board to carry it out, their full charter and statutory rights as state banks or trust companies and are entitled to all the privileges of member banks, provided that the rediscount privilege is denied to the state institution for paper of any one borrower who is liable to such state institution in an amount greater than 10 per cent. of its capital and surplus. (*e*) Overcertification is prohibited, under penalty of forfeiture of membership.

(4) *As to par collections.*—Some of the existing par-collections regulations were entered into the law and the Hardwich amendment added, which would permit reasonable exchange charges, "to be determined and regulated by the Federal Reserve Board, but in no case to exceed 10 cents per $100 or fraction thereof, based on the total of checks and drafts presented at any one time". This amendment finally evolved on the statutes is so loaded with limitations as to be quite worthless and unsatisfactory to the country banks, its original proponents.

(5) *As to bank acceptances in domestic trade.*—The permission to member banks to accept bankers' bills drawn in domestic trade was reinstated in the Act, from which it was accidentally dropped in the amendatory legislation of Sept. 7, 1916.

(6) *As to establishment of accounts with other Federal reserve banks or agencies abroad.*—The Federal Reserve Board was empowered to compel a Federal reserve bank to open such accounts or establish such agencies or correspondents, and whenever any such account, agency or correspondent is opened by one Federal reserve bank with the consent or at the direction of the Board, any other Federal reserve bank may be permitted by the Board to use this account, agency or correspondent.

(7) *As to manner of issue of Federal-reserve notes.*—To the collateral which is permitted to be pledged with the Federal reserve agent for issues of Federal-reserve notes there were added gold or gold certificates; such gold pledged is to be counted as part of the gold reserve which the bank is required to maintain against its Federal-reserve notes in actual circulation. The amendment was passed to facilitate concentration of the gold supply in the Federal reserve banks directly; it was otherwise being accomplished by an indirect method of redemption of pledged paper with gold.

(8) *As to the Federal Reserve Board's account with the Treasury of the United States.*—See discussion of the "Gold Settlement Fund", *supra*.

(9) *As to purchases of government bonds.*—At time of organization national banks are no longer required to transfer and deliver a minimum amount of government bonds and pledge them with the Treasury as security for national-bank note issues.

(10) *As to reserves against demand and time deposits.*—Time deposits are defined as payable after 30 days and all postal-savings deposits; the reserves on these are reduced from five to three per cent. The reserves against demand deposits were fixed at 13 per cent. for banks in central-reserve city banks, 10 per cent. in reserve-city banks, and seven per cent. in country banks. All the reserves are to be held in the Federal reserve banks, and the bank can keep what till money it finds expedient. Member banks are forbidden to keep on deposit with a non-member bank a sum in excess of 10 per cent. of its own paid-up capital and surplus. The balances carried by a member bank with a Federal reserve bank may be checked against and withdrawn by the member.

(11) *As to rights of directors.*—The penal part of the Federal Reserve Act was restated so as to define more clearly the rights and limitations of directors in the matter of accepting fees or compensation other than the ordinary fees paid directors for legitimate services rendered in the regular course of business, the performance of which service is not incumbent upon them in their capacity as directors.

(12) On Oct. 6 the President signed an act repealing the Act of Mar. 4, 1900, thereby permitting every national bank to issue up to $25,000 of its circulation in one- and two-dollar bills. Heretofore, the smallest national bank-note has been five dollars.

State Legislation.—State legislation has concerned itself with several matters, some of which are mentioned above. Permission was granted by the legislatures of several states to their state institutions to join the Federal reserve system. Some states enabled national banks within their boundaries to do trustee business. Others made the Federal farm-loan bonds an eligible investment for trust funds. Montana, Iowa, South Dakota, Idaho, California, New York, Pennsylvania, and possibly other states amended their laws as to reserves, (1) to permit them to carry reserves in whole or part with the Federal Reserve Bank, or (2) to reduce the reserves, or (3) to fix reserve agents and the proportions to be kept in each. Several states enacted one or more of the uniform acts (see VIII, *Law and Jurisprudence*). Other laws recommended by the American Bankers' Association were passed as follows: (1) providing a penalty for making false statements to obtain credit, by Arkansas, Illinois and Nebraska; (2) punishing persons who maliciously circulate statements derogatory to the financial standing of banks, by Arkansas; (3) punishing the giving of checks where there are insufficient funds, by Arkansas, Illinois, Iowa, Missouri, Nevada, Oregon and South Dakota; (4) defining the punishing of burglary with explosives, by Illinois and Iowa; (5) authorizing the payment of deposits in two names to the survivor, by Illinois and North Carolina; (6) relating to competency of bank notaries, by Nevada; (7) authorizing banks receiving paper for collection to send direct to the payor, thereby relieving them from liability in case of default by the latter, if due diligence is used; and also defining due diligence, by Montana.

LIFE INSURANCE

WENDELL M. STRONG

General.—The year 1916, complete statistics for which were not available until some months after its end, was a banner year in life insurance. The amount of insurance issued showed an unexampled increase over the preceding year, an increase more than that for the entire four-year period preceding. While an increase in new business alone does not always spell prosperity for life insurance (*A. Y. B.*, 1916, p. 369), nevertheless a large amount of new business, if obtained at reasonable cost, does tend to indicate prosperity. In 1916 the conditions under which the business was obtained were satisfactory. The year also was favorable not only in regard to new insurance, but also in regard to other factors. As shown by the accompanying statistics, a new high mark was set in amount of assets, surplus, income, payments to policyholders, insurance in force, and dividends paid, while the wastage of insurance, as shown in surrenders and lapses, decreased, the actual amounts being below those of the two preceding years and practically the same as for the year 1913, when the amount of insurance in force was considerably less. Complete statistics are not as yet available for the year 1917, but it is known that the conditions prevailing in 1916 continued during a good part of the year 1917, with increases in the amount of insurance issued over the corresponding period in 1916 and with other factors in general favorable. When the year was about two-thirds through, however, a change could be noticed, doubtless due to the business unsettlement resulting from high taxes, the draft and other incidents of the war, and a gradual slowing down of the business extending into the next year or two to a greater or less decrease in the amount of new issues is now rather generally looked for.

Financially the year 1917 has been unsatisfactory because of the continued decrease in the market values of investment securities (see XII, *Economic Conditions*). With securities like bonds or mortgages which have fixed returns, this is not of great importance to the companies, since they do not sell such securities but carry them to maturity. In some cases, however, not only market but real values have decreased in such securities, and where this has occurred, of course it means that much lost. The importance of the amortization method of valuation (*A. Y. B.*, 1914, p. 361) is strikingly shown by the present situation, in which a market valuation would make a fictitiously unfavorable showing for many companies. Were the amortization method not available, some makeshift method would necessarily have to be found to replace a market valuation as of the end of the year. In fact, where the amortization method does not apply, this has been done by the action of the commissioners of the various states in deciding to take an average of a series of values running back about 18 months instead of the market value at the end of the year. (See also *Property and Casualty Insurance, infra.*)

It might seem that the opportunity for investing funds, as they became available, in securities at a much higher rate of interest than has been possible heretofore would be of much help in establishing a higher average interest rate on the invested funds of the companies. This probably would

STATISTICS OF UNITED STATES LIFE-INSURANCE COMPANIES

(*Insurance Year Book*)

Year	Number of Companies	End of Year		Premiums Received[2] (millions)	Total Income[2] (millions)	Total Payments to Policyholders[2] (millions)	Total Disbursements[2] (millions)	New Business[3] (millions)	Amount in Force at End of Year[3] (millions)
		Admitted Assets[2] (millions)	Surplus[1] (millions)						
1916	232	$5,550	$702	$846	$1,124	$555	$790	$3,274	$19,854
1915	235	5,190	663	784	1,042	544	767	2,643	18,351
1914	250	4,940	665	748	988	510	708	2,507	17,381
1913	259	4,658	624	715	925	468	659	2,533	16,588
1912	248	4,407	621	672	893	447	628	2,405	15,559
1911	239	4,163	603	632	834	414	569	2,101	14,577

[1] Includes amounts set apart for dividends to policyholders during following year. [2] Includes industrial business in 26 companies. [3] Does not include industrial business.

SURRENDERS, LAPSES, LOANS, AND DIVIDENDS (1)

(*New York State Report*)

Year	Number of Companies	Amount in Force, End of Year (millions)	Amount of Policies Surrendered (millions)	Amount of Policies Lapsed (millions)	Policy Loans End of Year (millions)	Dividends to Policyholders (millions)	Amount Paid for Surrendered Policies (millions)
1916	35	$16,784	$341	$384	$693	$119	$100
1915	35	15,632	390	433	691	106	113
1914	35	14,933	362	427	657	104	102
1913	34	14,304	339	383	614	96	87
1912	34	13,527	276	366	548	88	84
1911	34	12,802	252	325	507	80	75

[1] Life companies reporting to State of New York only.

be so were it not for the Liberty loans (see *Public Finance, infra*). The amount of bonds which the companies received from their subscriptions to the first Liberty Loan, together with the amount of their subscriptions to the second, aggregate about 80 per cent. of the increase of the invested funds of the companies for a period embracing the time of making the two loans. This would mean that comparatively little would be left over for such other investments as the companies might choose, and as the first Liberty Loan bore but 3½ per cent. interest and the second but four per cent., investments in these realize only a low rate.

War Risks.—Very few policy contracts issued before the United States entered the European War contain restrictions on military or naval service. For some years prior to 1914 there had been the feeling that important wars were things of the past, so that it has become the custom to issue policies free from all restrictions as to military or naval service. This custom was carried on by many companies right up to the entry of the United States into the war, so far as United States citizens were concerned. While some of the older policies originally contained restrictions, these restrictions in general have been waived by action of the companies. The result is that, for the great mass of policies in force, whatever excess mortality comes from the war will not be compensated to the companies by extra premiums or in any other way. In other words, the other policyholders (or in some cases the stockholders) must bear the cost of the excess war mortality. Policies issued since the United States declared war practically all provide for an extra premium in case of military or naval service. These policies are of two classes; in one the extra premium is charged for military or naval service anywhere, in the other, only in case the insured engages in military or naval service outside of the United States. It is natural that in the second case the extra premium should be higher, since it presumably would be paid by a smaller number and perhaps for a shorter time and yet would cover the principal extra risk. The majority of the companies have preferred the system of requiring an extra premium only in case of service outside the United States. The amount of this extra premium varies, but probably the most common is 10 per cent. per annum of the face amount of the policy; some companies include with this a provision that the mortality among those paying such extra premiums should be investigated after the war and any overcharge refunded. That a considerable extra mortality must be anticipated unless the war is to end shortly is shown by the experience of the British and Canadian companies. At the same time, the ratio of those in military or naval service to the total population of the United States will probably be considerably less than similar ratios in either Great Britain or Canada; as a consequence of this and other factors, the effect on the total mortality experienced by the companies also will probably be considerably less. As practically no American troops were in the trenches up to near the end of 1917, the extra mortality due to the United States being in the war is a matter of the future.

Government Insurance for Soldiers and Sailors.—One of the unexpected developments of the war has been the undertaking by the Government by an Act of Oct. 6, 1917, to provide insurance, or more properly indemnity, to those in the Army and Navy to take the place of the usual pensions. The scheme has two elements—first, an indemnity for death or disability provided to everyone in the service free of cost, and second, insurance which can be purchased by those engaged in the service.

The first of these elements provides compensation in case of death or disability along lines very similar to workmen's compensation, which in case of death takes the form of income to dependents, and the amount of income payable is governed by what the dependents are. For instance, a widow receives $25 a month; widow with one child, $35 a month; widow with four children, $57.50 per month; if there is no widow and there is one child, it receives $20 per month; two children, $30 per month; five children, $50 per month; a widowed mother who is dependent receives $20 per month. The maximum total payment possible is $75 per month; payment of compensation to widow or widowed mother continues till death or remarriage, and to a child, to 18 years of age or marriage. In case of total disability, if there is neither wife nor child, the payment is $30 per month; in case of loss of both feet, both hands, both eyes, or being permanently bedridden, $100 per month. The compensation is the same for all without regard to rank.

There is also given to each person in military or naval service the option to take an amount of insurance up to $10,000 on the one-year renewable-term basis and at a net peace premium, without extra premium for the war risk or for the disability benefits, for the extra hazard and cost of disability benefits will be carried by the taxpayers. This means that the premium for the draft ages would average somewhere about $8 per $1,000 per year. This term insurance cannot be carried more than five years after the termination of the war, but within that time can be converted, without medical examination, into some permanent form of insurance, such as ordinary life, limited-payment life, or endowment.

In the formulating of these schemes the advice of insurance men was sought. When the question came of an indemnity to be provided on a definite basis for soldiers and sailors, there was a further question whether it should be carried by the Government directly or through the companies. Insurance men, with few exceptions, were in favor of the carrying of the risk by the Government, particularly since it was indemnity rather than insurance proper and could be so treated by the Government, and the use of the medium of the companies would only add further machinery and expense without any compensating advantage. It was felt that the Government could undertake to furnish this indemnity directly without the necessity of determining beforehand what the risk would be, since there would be no premium to be determined and whatever the amount of the loss was, the Government could appropriate the funds to make payments. In this way one of the greatest of the difficulties could be avoided, namely, that of forecasting what the risk of death or disability would be under conditions on which previous statistics threw little light. The insurance world approves the compensation idea but many do consider that there is objection to giving in addition the option to those in service of taking insurance at a much lower rate than the real cost, holding that this discriminates in favor of those who are able to pay the premiums for the maximum amount against those who are unable and who are probably the ones most in need of insurance, and also that whatever the Government gives in the way of indemnity or insurance should be the same for all and should be without any charge.

The magnitude of the Government undertaking is enormous. The insurance equivalent of the compensation provided for dependents in case of death is a number of thousands of dollars, even where there is a widow only, and it increases with the number of dependents. What the average amount will be per man cannot be estimated, for this would involve, first, a guess at what proportion would be married. For a million and a half men in service, which number has probably been passed in 1917, it cannot be less than several billion dollars, and, when the United States forces reach two and a half or three millions, the amount will be increased *pro rata* unless the draft regulations are changed to exempt a larger proportion of married men. In addition to this, the benefits in case of disability accrue to all in service whether there are dependents or not. All this is provided by the Government free. There is also the optional insurance offered at a premium that is nominal, considering the large amount of the hazard. How much will be taken depends largely on how thoroughly those in service are canvassed. It seems, however, to be the Government plan to make a thorough canvass, and if this is done, most will take some insurance. Up to Jan. 5, 1918 the average amount of policy applied for was above $8,000. The total amount of insurance was over $3,100,000,000. The usual limit of three months from entry into service within which such insurance can be taken was extended for all to February 12th so that a very considerable increase in this amount will undoubtedly be made before that time. This would indicate that if the war continues for two or three years more, the total insurance carried by the government under both the free plan and the optional insurance plan may, with the increase of our forces and the more thorough canvassing for the optional insurance, surpass perhaps the total amount in force on the ordinary (i.e., not industrial assessment, or fraternal) plan, including foreign business, of all the United States companies. This amount was at the end of 1916 in the neighborhood of $20,000,000,000 and probably at the end of 1917 is not far from $2,000,000,000 greater. This, however, must be taken as a statement of possibilities only, since it will depend not only on the number of the United States forces, but also very largely on how thoroughly they are canvassed for the optional insurance, and our present knowledge is not sufficient to justify any statement as an estimate.

The magnitude of the administrative task is also enormous. Each man in service means disability insurance in force; if he has dependents within the specified classes, it also means life insurance, and in addition, there are the optional policies. This means putting into force in a few months millions of separate insurances, and in the meantime creating from nothing the machinery to care for them. For comparison, the largest number of ordinary policies issued by any company in 1916 was about 125,000 and the largest number of industrial policies about 1,275,000, but in these cases the machinery was a matter of growth and ready to perform its work almost automatically. Again, the comparison must not be carried too far because under the free government compensation no applications need be made, no policies be issued and no premiums collected; on the other hand, settlement by the Government is by an income to dependents and involves the administration of the income and, if properly done, an investigation of dependents. The optional insurance will be much more nearly like that issued by the companies, but here again there will be important differences. It is worth noting that the administrative cost of the insurance will never be known, since some, at least, of the work will be done by men in the Army and Navy.

Industrial and Fraternal Insurance.—The accompanying statistics of industrial insurance show the normal increases in various items in 1916. The statistics for fraternal insurance show a considerable increase in the number of orders and also increases in the amount of insurance in force. In 1917 one of the most prominent orders, and one which has been favorably known for the economy of its administration, the Royal Arcanum, has obtained newspaper prominence through the appointment of a receiver, but the receivership was afterwards vacated.

UNITED STATES INDUSTRIAL INSURANCE COMPANIES

(*Insurance Year Book*)

Year	Number of Companies	New Business (millions)	Insurance in Force at End of Year		Premiums Received (millions)	Losses Paid (millions)
			Number of Policies (millions)	Amount (millions)		
1916	28	$998	35	$4,811	$275	$76
1915	33	973	33	4,434	254	70
1914	31	861	31	4,163	237	64
1913	31	850	29	3,977	218	60
1912	31	840	26	3,707	199	53
1911	32	785	24	3,423	183	50

UNITED STATES FRATERNAL ORDERS

(*Insurance Year Book*)

YEAR	Number of Orders	Assessments (millions)	Total Income (millions)	Claims Paid (millions)	Total Disbursements (millions)	Assets End of Year (millions)	New Business (millions)	Number of Certificates in Force, End of Year (millions)	Amount in Force, End of Year (millions)
1916	523	$133	$146	$107	$130	$250	$1,155	8	$9,162
1915	472	122	133	98	123	212	922	7	8,694
1914	498	125	144	98	121	189	1,079	7	9,171
1913	509	129	144	101	121	183	1,065	8	9,622
1912	397	123	132	95	114	163	1,023[1]	9[1]	9,472
1911	396	117	130	84	113	148	1,200	10	9,839

[1] Decrease as compared with 1911 is partly due to incomplete figures from some orders.

PROPERTY AND CASUALTY INSURANCE

S. S. HUEBNER

Fire and Marine Insurance.—According to the *Insurance Year Book*, 663 fire- and marine-insurance companies and Lloyds associations transacted business in the United States during 1916, as compared with 659 in 1915, 633 in 1914, and 645 in 1913. The capitalization of these companies and associations totaled $118,094,000, an increase of nearly 9.7 per cent. as compared with 1915. The total assets of $983,032,000 show a still more substantial increase, the gain in this item for the year being $94,332,000,

FIRE AND MARINE INSURANCE COMPANIES[1]

Year	Number of Companies and Lloyds	Capital (thousands)	Total Assets Exclusive of Premium Notes (thousands)	Net Surplus (thousands)	Net Premiums (thousands)	Total Income (thousands)	Paid for Losses (thousands)	Paid for Dividends (thousands)	Paid for Expenses (thousands)	Total Disbursements (thousands)
1916	663	$118,094	$983,032	$356,020	$507,523	$550,010	$250,545	$42,537	$175,005	$468,086
1915	659	107,674	888,700	330,353	433,995	474,626	226,867	29,839	159,568	416,275
1914	633	105,670	828,187	292,454	405,975	440,733	228,215	33,786	144,638	406,640
1913	645	105,195	801,918	291,192	385,367	421,598	204,797	34,266	143,033	382,097
1912	621	96,944	784,478	292,893	371,626	410,760	190,073	32,526	136,738	359,338
1911	621	97,703	754,344	283,201	358,623	392,966	184,917	33,291	129,474	347,683
1910	628	94,918	713,138	263,867	352,436	385,657	168,433	35,905	124,878	329,218
1909	636	87,638	668,194	243,414	333,862	365,264	156,369	31,217	116,964	304,552

[1] Compiled from the *Insurance Year Book*.

or 10.6 per cent. This gain compares with 60 millions during 1915, 26 millions during 1914, 17 millions during 1913, and 30 millions during 1912. Net surplus amounted to $356,020,000, a gain over 1915 of $25,899,000, or 7.7 per cent. This increase appears small when compared with the 13 per cent. gain of 1915, but it should be recalled that 1914 showed a gain of only $1,262,000, while during 1913 there actually occurred a decline of $1,701,000. As was explained for the year 1913 and 1914 (*A. Y. B.*, 1914, p. 364; *A. Y. B.*, 1915, p. 372) the shrinkage in surplus for these years was largely the result of the exceedingly low range of security values prevailing at the time. During 1915 and much of 1916, on the contrary, stock and bond prices averaged high and produced a corresponding improvement in the net surplus. Owing to the decline in security values during 1917, however, a much less favorable showing in surplus may be anticipated for the next report.

Net premiums and total income show increases during 1916 of $73,528,000 (nearly 17 per cent.) and $175,384,000 (over 36 per cent.), respectively. These figures compare with increases of $28,020,000 and $23,893,000 for 1915 as contrasted with 1914. Paid-for losses show an increase of $23,678,000, whereas during 1915 such losses actually declined $1,348,000. Total disbursements increased $51,811,000, as compared with $9,635,000 for 1915. Of the total disbursements, the amount paid for losses constituted 53.4 per cent., dividend payments, 9.0 per cent., and paid expenses, 37.4 per cent. The respective ratios of these items to total disbursements in 1915 were 54.3 per cent., 7.1 per cent. and 35 per cent.; and for 1914, 56 per cent., 8.3 per cent., and 35 per cent.

An even more favorable showing is presented by the summary of the report of the New York Insurance Department for 1916. Here it is shown that 275 fire-marine and marine-insurance companies, writing fire and marine insurance in New York State, had aggregate assets on Dec. 31, 1916, of $867,614,886, an increase over the preceding year of $84,601,054. Total liabilities of these companies, excluding capital stock, amounted to $447,450,182, an increase for the year of $55,387,138, as compared with a gain of only $14,835,000 during the previous year. The report also shows that while the total income of $524,763,212 represents an increase of $71,554,079, the increase in total disbursements amounted to only $51,155,070. Total payments, however, show an increase of $22,761,578. The total result of the year's operations is summarized by the *United States Review* in its review of the year's record as follows:

> The underwriting result based on earned premiums shows a gain from underwriting of $23,676,268. The gain from investments was $35,961,977; the loss to surplus, due to dividends, balance of remittances to and from the home offices of foreign fire insurance companies and changes in special reserve items amounted to $43,772,216; the total result being a net gain in surplus from all sources of $15,866,029.

The following table shows the combined risks and premiums of American and foreign companies operating in the United States for the past ten years, as reported by the *Insurance Year Book:*

	Amount Covered (000 omitted)	Premiums Charged (000 omitted)	Rate per $100
1907....	$35,375,319	$402,874	$1.1389
1908....	37,155,734	417,671	1.1241
1909....	39,951,263	442,415	1.1074
1910....	43,123,801	464,616	1.0774
1911....	46,276,992	491,072	1.0612
1912....	48,840,386	514,594	1.0536
1913....	52,856,280	544,836	1.0308
1914....	56,012,859	570,687	1.0189
1915....	58,867,095	588,701	1.0000
1916....	63,355,299	628,209	.9915

Aggregate combined risks of nearly 63½ billions represent an increase of 7.6 per cent., as compared with only slightly over 5 per cent. during 1915. The average rate per $100 of insurance is reported as $0.9915, as compared with $1.0000 in 1915 and $1.0189 in 1914. As shown by the accompanying table, the constantly declining tendency in the average fire-insurance rate offers a sharp contrast to the unprecedented advance during recent years in the price of food, staples and construction materials.

Fire Losses.—As already indicated, the only really unfavorable experience of fire-insurance companies during the year 1916 was the unusually high fire loss. The total fire waste for the year, as compiled by the *Journal of Commerce and Commercial Bulletin*, amounted to $231,442,995, as compared with only $182,836,200 in 1915, an increase of 26.5 per cent., and an average annual loss for the five-year period, 1911-1915, inclusive, of $220,562,210. A large portion of the unusual increase experienced during 1916 is attributable to the destruction of a considerable number of large warehouses, docks, and war manufacturing plants, current press reports lending color to the possibility of incendiarism having played a prominent part in connection therewith. During 1915 the *per capita* fire loss in the United States amounted to approximately $2.28. An examination of the *per capita* loss for 338 cities, with a population of 20,000 or more, as compiled in the *Insurance Year Book* from a report of the *National Board of Fire Underwriters*, shows that in 62 the *per capita* loss during 1916 was over $3.00; in 35, over $4.00; in 24, over $5.00; in 16, over $6.00; in 11, over $7.00; and in nine, between $8.00 and $27.71. As contrasted with these losses, mention may be made of the *per capita* losses for the following large European cities: London, $0.94, Birmingham, $0.69, Dublin, $0.66, Glasgow, $0.44, Milan, $0.35, and Florence, $.12. (See also VI, *Fire Prevention.*)

During the first nine months of 1917 fire losses unfortunately averaged even higher than during the corresponding period of 1916, the total waste amounting to $194,617,868 as compared with $171,799,845 for the same period in 1916, an increase of $22,818,023, or over 13 per cent. This recent experience is again traceable in large part to exceptionally large fires, some of them reported to be due to incendiarism, in warehouse, dock and war manufacturing establishments (see also VI, *Fire Prevention;* and XX, *Civil Engineering*). The table is compiled by the *Journal of Commerce and Commercial Bulletin.*

FIRE LOSSES

	1913	1914	1915	1916	1917
January..............	$20,193,520	$23,204,700	$20,060,600	$21,423,350	$36,431,770
February.............	22,084,600	21,744,200	13,081,250	24,770,770	29,587,660
March................	17,511,000	25,512,750	18,786,400	38,680,250	17,523,000
April................	16,738,250	17,700,800	18,180,350	12,681,050	18,597,225
May..................	17,225,850	15,507,800	11,388,450	15,973,500	24,968,800
June.................	24,942,700	29,348,000	10,893,950	12,247,500	15,513,270
July.................	20,660,900	17,539,800	9,006,800	23,013,800	16,143,050
August...............	21,180,700	11,765,650	10,067,100	10,745,000	21,751,100
September............	17,919,300	14,383,050	14,823,500	12,244,625	14,101,990
October..............	14,932,750	14,004,700	14,465,850	17,701,375	26,384,450
November.............	15,207,600	21,372,750	21,204,850	19,898,450	20,198,025
December.............	16,126,450	23,507,150	20,877,100	22,063,325	26,360,300
Total.............	$224,723,350	$235,591,350	$182,836,200	$231,442,995	$267,560,640

New Basis for Valuing Assets.—Besides facing a substantial increase in fire losses during 1917, insurance companies of all classes are confronted with an appalling shrinkage in the value of their enormous security investments. Good representative bonds, as measured by a typical group, show a decline between January and November of 1917 from 93.9 to 81.8 per cent., or nearly 13 per cent. Similarly, a representative list of railroad stocks declined during the same period from 137.9 to 107.1, or 22 per cent. (see also XII, *Economic Conditions*). To meet such an enormous shrinkage in the market value of long-time securities, a situation believed to be only temporary in nature, the Committee on Valuation of Insurance Assets of the National Convention of Insurance Commissioners took action at its meeting in October to make the valuation of securities on an average basis so far as the year 1917 is concerned. Instead of taking the quotations of Dec. 31 as the basis of valuation, the new proposed course involves the striking of an average of the quotations of November 1, 1916, and the first days of February, May, August and November, 1917. This plan, it is believed, is well adapted to meet the unusual requirements of the present situation.

The Laney-Odom Law.—Last year's account (*A. Y. B.*, 1916, p. 374) set forth the nature, effect and constitutionality of the so-called Laney-Odom law, adopted by South Carolina early in 1916. In his message at the beginning of 1917 Governor Manning called attention to the fact that as a result of this legislation a large majority of insurance companies had withdrawn from the state; that the available insurance was inadequate; that no reduction in rates had occurred, as was anticipated, but that, contrary to expectations, an increase actually resulted; and that in many instances the insurance obtainable was not reliable in character. Realizing the importance of the matter, the Governor appointed a commission, with the state insurance commissioner as chairman, to study the entire insurance situation with a view to recommending a complete revision of the insurance laws of the state. As a result a new rating law was adopted, which, unlike the Laney-Odom Act, does not forbid fire-insurance companies from "entering into any compact or combination for the purpose of governing or controlling rates charged for fire insurance in that state", but permits the companies to employ "a common agent or agents to prepare and furnish maps and other data as to risks, and to supervise and advise of defective structures or suggest improvements to lessen the fire hazard". The new act is therefore important as another illustration of legislation, fortunately rapidly on the increase, which legalizes fire-underwriters' associations, although bringing them under some form of state control. In contrasting the new act with the previous one, the Insurance Commissioner of South Carolina recently issued the following statement of explanation:

> It must be remembered that the Laney-Odom act was passed distinctly for the purpose of creating competition in fire insurance rates, and the only essential difference in principle between the rating law enacted this year and the Laney-Odom act is that whereas under the latter no compacts as to rates could be made, under the present law only such compacts may be made as are in writing, are filed with the insurance commissioner and approved by him. His approval or disapproval are both subject to summary review before a judge by interested parties.

Standard Schedule for Grading Cities and Towns.—After two years of careful work, the National Board of Fire Underwriters has perfected its "Standard Schedule for Grading Cities and Towns", with the intention of applying it to localities of 20,000 population or over. Its adoption, according to the National Board, will affect directly or indirectly the interests of practically every property owner in the United States, and will be instrumental in bringing about a general advance in improved fire protection and the elimination of the fire hazard. Up to the present the numerous standards for grading the adequacy and reliability of various features governing the fire hazard of cities differ considerably, with the result that a great lack of uniformity in standards developed, partly because different principles were followed, and partly because of constant changes dictated by local considerations. In this respect it is asserted that the new schedule has the advantage of being adaptable for use in connection with any of the various existing rating systems. Following its perfection, the schedule was approved by the Actuarial Bureau Committee of the National Board on Dec. 5, 1916, and was thereupon adopted by the Executive Committee as a National Board standard. This Committee also adopted a resolution to the effect that the schedule should be adopted by the various organizations throughout the country. It appears that the Southeastern Underwriters' Association has already adopted the schedule, after trial applications to a large number of cities and towns in that territory.

New Standard Fire Policy in New York.—Following considerable agitation for a revision of the New York standard fire-insurance policy in 1913 the then superintendent of insurance requested the president of the National Convention of Insurance Commissioners to appoint a committee to undertake the revision. The result of this investigation was the adoption by the National Convention on Dec. 9, 1914, of the report of the committee recommending the adoption of the standard fire policy set forth in its report. Certain objections, however, were raised by the Insurance Department to certain features of the policy, with the result that at a meeting of the National Convention of Insurance Commissioners, held on Dec. 12, 1916, an amended policy form was reported by the special committee and unanimously adopted by the Convention. This policy form, substantially adopted by the state since, is regarded as representing a considerable improvement over that adopted by the legislature in 1886.

Marine Insurance.—Despite war conditions, the marine branch of the insurance business, judging from the returns of companies confining themselves entirely to this branch of underwriting, experienced very satisfactory progress during the year 1916. The extent of this progress may be judged by the showing of the 32 marine-insurance companies reporting to the Insurance Department of New York State, although it should be noted that a considerable number of fire-insurance companies also write marine risks. According to the New York report, the 32 companies had marine risks in force at the close of 1916 of $1,214,119,435, an increase of $355,183,286 (41 per cent.) over the total volume of insurance outstanding at the close of 1915. This huge increase in the volume of business may be compared with that of 162½ millions during 1915 and only $678,000 during 1914. Premiums received increased from $28,013,171 at the close of 1915 to $42,137,536 at the close of 1916, or 50 per cent. Paid-for losses, however, showed an increase of 26 per cent., from $13,399,492 to $16,936,442. Total income increased during the year from $33,831,485 to $50,829,694, or approximately 50 per cent. Despite the substantial increase in paid losses, the premium and total income of these companies was so much larger as to increase the net surplus of the companies from $21,671,485 to $24,964,801, or 15 per cent.

War Risk Insurance.—Previous issues of the YEAR BOOK (1914, p. 368; 1915, p. 381; 1916, p. 376) explain the nature and purpose of the Federal Bureau of War Risk Insurance. Congress in 1917 extended the arrangement for another year (see also XIX, *The Merchant Marine*). Since the creation of the Bureau on Sept. 2, 1914, a total of 9,403 policies, carrying insurance of $800,000,000, have been issued, and at the beginning of September, 1917, the net amount at risk was $165,700,000. The profitableness of this venture into insurance by the Government is indicated by the fact that premiums received up to Sept. 6, 1917, exceeded $25,000,000, while the known losses on that date reached $15,700,000. After Oct. 1, 1917, all vessels trading to or from all ports of Europe and ports on the Mediterranean coast, must, in order to obtain the benefits of the Bureau's war-risk insurance, be armed in accordance with the recommendations of the Navy Department, and for failure to comply with such requirements the Bureau reserves the right to impose a penalty of one per cent.

in the insurance rate for each voyage. Requirements were also issued by the Bureau to the effect that all vessels must be painted in accordance with one of the systems approved by the Bureau in order to lower visibility; that steamers must carry sufficient supplies of smokeless fuel to last for two daylight periods for use during daylight runs within the submarine zone; and that all vessels operating through this zone must carry on deck one dozen approved smoke boxes. It should be added that in June Congress adopted an amendment to the act authorizing the establishment of a Bureau of War Risk Insurance which "provides for the reciprocal reinsurance of ships and cargoes between ports of the United States and foreign countries when such ships or cargoes are insured by a Government which is at war with a common enemy".

Owing to the submarine hazard, marine insurance rates have necessarily been very high during the year. On Sept. 21, 1917, the following rates were published, as representative of those prevailing on leading trade routes:

> To Liverpool: Fast passenger vessels, 6 per cent.; cargo steamships, 8 per cent.; neutral vessels, 10 per cent.; London, 7½ per cent. on fast steamships, 8½ per cent. on cargo boats, 10 per cent. on neutrals; Bordeaux, 6 per cent. on passenger steamships, 7½ per cent. on cargo steamships, 15 per cent. on neutrals.
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> Mediterranean rates range from 8 per cent. on special steamers to 15 per cent. on neutrals, but the average rate is about 11 per cent. to French and Italian ports, while 15 per cent. is quoted on steamships for Greece. The South African rate is 3 per cent. South American rates are five-eighths of one per cent. to Brazil and three-quarters of one per cent. to the River Platte.

It may be stated that the British Government also has been engaging to an increasing extent in marine insurance for American shipowners and merchants. This growing custom of insuring direct with the British Government was largely the result of the serious depredations of the submarine. As a result of this menace, marine rates reached such a high level as seriously to interfere with the profits of American exporters and importers. It was to meet this emergency that the British Government finally came forward and offered to assume the hazard at a rate of 2½ per cent., a figure much below the actual cost of the insurance. No doubt the Government was willing, in order to maintain the overseas trade, to furnish the insurance at an actual loss. But in this connection it should be noted that the British Government, as contrasted with private companies, has no expense element to bear and pays no commission.

Liability and Compensation Insurance.—The extent of employers'-liability and workmen's-compensation insurance is indicated by the premiums written and losses paid by 49 companies writing liability contracts and 79 companies (47 stock and 32 mutual companies) transacting workmen's-compensation insurance. According to the *Insurance Year Book,* the liability premiums of these companies for 1916 amounted to $42,458,213, the losses paid to $22,262,841, and the ratio of losses to premiums to 52.2 per cent. For 1915 the corresponding figures were $35,537,231, $22,262,841, and 62.6 per cent. On workmen's-compensation policies the premiums amounted to $57,247,829, the losses paid to $28,519,769, the ratio of losses to premiums for the stock companies to 44.3 per cent., and for the mutual companies to 27.1 per cent. For 1915 compensation premiums totaled $31,348,758 and losses $15,603,464. At the time of the last report (*A. Y. B.,* 1916, p. 376) 31 states had adopted workmen's-compensation laws, in addition to Alaska, Hawaii, the Canal Zone, the Philippine Islands, and the Federal Government. During 1917 five additional states adopted compensation laws, *viz.,* Delaware, Idaho, New Mexico, South Dakota, and Utah, the effective dates of these laws being Jan. 1, 1918, for Delaware and Idaho, and July 1, 1917, for New Mexico, South Dakota, and Utah. (See also VIII, *Law and Jurisprudence.*)

To quote E. W. DeLeon's review of casualty insurance in the *Insurance Year Book:*

> There are now six states having state-managed insurance schemes under workmen's compensation laws, and no pri-

vate insurance company is allowed to transact such insurance. These states are Idaho, Nevada, Ohio, Oregon, Washington and West Virginia. Seven states have state-managed insurance with which private insurance companies are allowed to compete, namely, California, Colorado, Maryland, Michigan, Montana, New York and Pennsylvania. Twenty-three states have no state-managed insurance of any kind, and all insurance is transacted by private companies. These states are Arizona, Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, Oklahoma, Rhode Island, South Dakota, Texas, Utah, Vermont and Wisconsin. In addition to the above states, workmen's compensation laws are in effect in Alaska and Hawaii, with no governmental insurance, and in Porto Rico, with an exclusive government-managed insurance fund.

Briefly outlined, the five new laws of 1917 provide the following (see also XV, *Labor Legislation*):

Delaware.—An elective law paying 50 per cent. of wages for total disability; administered by an Industrial Accident Board; insurance or proof of financial responsibility required; private system of compensation permitted to be substituted on approval of the Industrial Accident Board; no state fund.

Idaho.—A compulsory act paying 55 per cent. of wages for total disability; administered by an Industrial Accident Board; insurance in state fund or security for payment of compensation required; no specific provision for private insurance carriers, but they will probably be able to operate in the same manner as in West Virginia.

New Mexico.—An elective act paying 50 per cent. of wages for total disability; administered by the court; insurance or proof of solvency required; election presumed for extra-hazardous employment; other employments may come under the law on filing of a written agreement between employee and workmen; no state fund.

South Dakota.—An elective act paying 50 per cent. of wages for total disability; administered by an industrial commissioner; insurance in other securities or proof of solvency required; substitute scheme of compensation permitted on approval; commissions for placing insurance limited to 15 per cent.; no state fund.

Utah.—A compulsory law with the exception that the employee may sue in certain kinds of wilful misconduct on the part of the employer. Pays 55 per cent. of wages for total disability; administered by an industrial commission; substitute system permitted on approval; insurance or proof of financial responsibility required; a competing state fund provided for.

In addition to the foregoing legislation, the following four important events[1] deserve special notice in this field of insurance:

(1) The revision of workmen's compensation rates. Owing to the insufficiency of existing rates to meet expenses and claims, a matter specifically called to the attention of the companies by the New York Insurance Department, a standing committee was appointed to consider the revision of rates assisted by an actuarial sub-committee. This committee studied the subject from January to March, 1917, and completely revised the manual, new premiums being adopted on the basis of a much wider experience than that previously used. Owing to the recent increase in the rate of accidents, due to greater industrial activity occasioned by the war, new factors were inserted to make allowance for the changed conditions. Although the element of estimate is still present to a large extent, the new proposed rates represent a decided improvement and will be instrumental in weighing much more adequately and equitably the various influences entering into the cost of compensation insurance.

(2) The adoption of a new experience rating plan by the National Workmen's Compensation Bureau. This new plan is designed to base experience rating on statistics to a much greater extent than heretofore. In slightly amended form this plan was submitted to the New York Insurance Department but thus far has not been approved. Similarly, the proposed Pennsylvania plan, a retrospective one, was not adopted by the Pennsylvania Bureau.

(3) The important decisions of the Supreme Court of the United States upholding the constitutionality of the New York, Washington and Iowa workmen's-compensation acts. New York's compulsory compensation law was held constitutional in New York Central R. R. *vs.* White; the Washington Act, differing from the New York Act in that contributions to an exclusive state fund are compulsory on employers, was upheld by a divided court in a suit brought by the

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[1] Attention is again called to the adoption of the Federal Workmen's Compensation law, Sept. 7, 1916, discussed last year.

ACCIDENT AND HEALTH INSURANCE

	Accident Insurance			Health Insurance		
	Premiums	Losses	Ratio of Losses to Premiums (per cent.)	Premiums	Losses	Ratio of Losses to Premiums (per cent.)
1916	$43,043,546	$19,159,528	44.5	$9,292,065	$4,501,239	48.4
1915	36,977,988	17,197,415	46.5	7,891,030	3,705,713	46.9
1914	36,524,812	16,304,776	44.7	7,594,840	3,533,656	46.5
1913	34,522,481	15,581,234	45.0	6,928,735	3,256,227	47.0
1912	29,792,473	13,408,552	45.0	6,339,406	3,126,160	49.0
1911	27,351,696	11,837,347	43.2	7,101,666	3,314,301	46.6
1910	23,894,665	10,068,926	42.1	6,451,028	2,770,744	42.9
1909	21,446,506	8,248,182	38.4	5,714,579	2,173,386	38.0

State against the Mountain Timber Co. of Kalama; and the Iowa act was sustained in Howkins *vs.* Bleakly and Garst. These decisions are important in that they settle favorably the constitutionality of compulsory or elective workmen's-compensation acts under the Federal Constitution, although the constitutionality of a compulsory state fund cannot yet be regarded as entirely settled on account of the divided action of the court in the Washington case. (See also VII, *Law and Jurisprudence.*)

(4) The decisions of the U. S. Supreme Court on May 21, holding that state compensation acts do not protect employees engaged in maritime occupations or in work covered by the term "interstate commerce". In Southern Pacific Ry. Co. *vs.* Jensen, the Court held that a stevedore engaged in unloading a steamship in New York Harbor was not covered by the New York workmen's-compensation law, but that his work came under the admiralty law, this being true of all work which is maritime in its nature. It is worthy of note that four Justices dissented to this opinion. In New York Central R. R. Co. *vs.* Winfield, the Supreme Court held (two judges dissenting) "that where an employee engaged in interstate commerce was injured, his only right to recovery arose from the provision of the Federal Employers' Liability Act which undertook to establish a uniform rule of liability throughout the union. With reference to the liability of common carriers to their employees, the power of the state to supplement such legislation was denied, the Act being declared to be comprehensive and also inclusive". (See also VIII, *Law and Jurisprudence.*)

Accident and Health Insurance.—The preceding table, compiled from the *Insurance Year Book*, shows the premiums, losses, and loss ratios in the accident- and health-insurance business for the past eight years. Accident premiums written by 119 companies during 1915 totaled $43,043,546, an increase of $6,065,558 over 1915, while the ratios of losses to premiums decreased from 46.5 per cent. to 44.5 per cent. The substantial increase in premiums for the year compares with an increase of less than $500,000 during the year 1915. In health insurance the premium income of 49 companies, writing health insurance separately, totaled $9,292,065, an increase of $1,401,035, but the loss ratio increased from 46.9 per cent. to 48.4 per cent. The substantial increase in premium income for the year compares with an increase of only $296,190 during 1916.

Fidelity Insurance and Corporate Suretyship.—The combined results in the fidelity and surety business during 1915 show premiums received of $25,882,000, losses paid of $6,768,000, and a ratio of losses to premiums of 26.3 per cent. Considered separately, 43 companies received on their fidelity business $8,878,316 in premiums, paid losses of $2,406,335, and experienced a ratio of losses to premiums of 27.1 per cent. Forty-one companies received on their surety business $17,003,753 in premiums, paid losses of $4,362,319, and reported an average ratio of losses to premiums of 31.4 per cent. The results in this business for the past eight years are indicated by the following table, compiled from the *Insurance Year Book:*

	Premiums (thousands)	Losses (thousands)	Ratio of Losses to Premiums (per cent.)
1916......	$25,882	$6,768	26.3
1915......	22,732	7,321	32.0
1914......	21,270	7,975	37.5
1913......	20,027	6,947	34.6
1912......	19,243	5,192	27.0
1911......	16,958	4,980	29.3
1910......	15,473	2,814	18.1
1909......	13,283	3,200	24.0

Miscellaneous Forms of Insurance.—The importance of the minor forms of insurance is indicated in the following table, which represents the 1916 record for the eight leading kinds of insurance coming under this heading as regards premiums received, losses paid, and the ratio of losses to premiums. Total premium income for all these types of insurance aggregated $26,148,002, while total losses paid amount to $9,460,355. These figures compare with $21,620,996 and $7,769,441 in 1915, and show increases of 17 per cent. and 18 per cent., respectively. With the exception of workmen's-collective and credit-indemnity insurance, the premiums written show a substantial increase in all instances.

MISCELLANEOUS INSURANCE IN THE UNITED STATES, 1916[1]

Type	Number of Companies	Premiums Written	Losses Paid	Loss Ratio (per cent.)
Plate glass..............................	42	$5,158,663	$2,685.902	52.0
Burglary and theft........................	44	5,427,977	1,932,022	35.6
Steam boiler..............................	14	3,449,706	261,813	7.6
Fly-wheel.................................	11	428,178	47,060	11.0
Automobile and teams property damage.....	49	9,558,590	3,853,763	40.3
Workmen's collective......................	25	456,434	286,515	62.7
Sprinkler leakage.........................	3	254,624	99,855	39.2
Credit indemnity..........................	4	1,413,830	293,423	20.7

[1] Table based on Edwin W. DeLeon's discussion in the *Insurance Year Book* for 1917, pp. A-170-76.

XIV. SOCIAL AND ECONOMIC PROBLEMS

SOCIOLOGY

HERBERT N. SHENTON

Statistics.—The real value of the use of statistics in studying collective human behavior is being more exactly and more properly appreciated. Contributions to the theory of statistics are often direct contributions to sociological methods; restatements of statistical theories often make possible their application in sociology. "Correlation" as a method of measuring the "degree of association" between variables is set forth with remarkable lucidity by Prof. Henry L. Moore in his chapter on "The Mathematics of Correlation" in *Forecasting the Yield and the Price of Cotton.* The treatment is algebraic (without calculus) and is presented in six successive theorems. Correlation method and curve fitting have also been discussed by Prof. Warren M. Persons in an article entitled "On the Variate Difference Correlation Method and Curve Fitting" (*Quart. Pub. Am. Stat. Assoc.*, xv, n.s. 118, pp. 602-642). "Ranking," which has for many years been defended by Prof. Franklin H. Giddings as a statistical method peculiarly applicable to social phenomena, is applied by Prof. W. F. Ogburn and Esther Kelley to a study of "Wages in American Cities" in such a manner as to suggest some of its possibilities (*ibid.*, n.s. 115, pp. 313-317). The use of "refined statistical methods" and the need of "useful statistical observations" are stressed by Prof. Harold Westergaard in a 48-page article on "Scope and Methods of Statistics" (*ibid.*, pp. 229-278). The author, an expert in the refinement of statistical methods, makes the significant statement that our present task is "not so much to prepare refined statistical methods as to provide useful observations".

Graphical methods of presenting social facts (see *A. Y. B.*, 1915, p. 666) have been found so serviceable that much attention is at present being devoted to the development of the method of graphics, and especially to the standardization of graphics (see *Preliminary Report of the Joint Committee on Standards for Graphic Presentation*). Dr. E. A. Goldenweiser has made a useful classification of graphs (*Quart. Pub. Am. Stat. Assoc.*, xiv, n.s. 114, pp. 205-209) as (1) reference, (2) illustrative, (3) analytical and (4) research, in accordance with the purpose for which they are made. Each class has its distinct limitations and its distinct possibilities. The use and construction of the *"ratio" chart,* a graphic device for displaying and comparing ratios, has been restated in a concise form by Prof. Irving Fisher in an article followed by a carefully selected bibliography (*ibid.*, n.s. 118, pp. 577-601). John Wenzel has also made a valuable contribution to the method in his article "Graphic Charts" (*Sci. Am. Suppl.* No. 2154, 236) Apr. 14, 1917.

Statistical Sociology.—Statistical methods have been applied to sociological data in a number of minor researches during the past year. Prof. John M. Gillette, in an article entitled "A Study in Social Dynamics" (*Quart. Pub. Am. Stat. Assoc.*, xv, n.s. 116, pp. 345-380) has made a statistical factorization of the increase in the population of the United States, endeavoring to determine to what extent genetic aggregation is modified by congregation resulting from migration. The same problem has been studied from a different angle by Dr. Warren S. Thompson in a series of three articles entitled "Race Suicide in the United States" (*Sci. Mon.*, July, Aug., Sept., 1917). Both the authors have compared the facts for the urban with those for the rural population, and they have also compared the facts for the various political divisions of the country. Dr. Thompson has also analyzed the low birth rate of the city by studying its appearance in each of four classes which he designates poor, comfortable, well-to-do, and wealthy. His claim and concern are that the successful classes of the most highly developed urban population are not even self-propagating, to say nothing of reproducing their proportion of the increase of the population. Studies of this sort will increase in value when the United States furnishes us with more statistics like those in *Birth Statistics* (First Annual Report) and in *The United States Life Tables,* which have recently been released by the Bureau of the Census. This valuable volume of tables, prepared under the supervision of Prof. James W. Glover, for the first time gives accurate vital statistics for the sex, color, and nativity population subdivisions of the population of the United States. The tables are based upon the statistics for registration areas as given in *Birth Statistics.* Separate tables have been made for urban and for rural population, and for the populations of the several states included in the registration areas.

In a socio-anthropometric *critique,* B. L. Stevenson has tested efforts to establish correlations between the anthropological race and the sociological race type of the Teutonic, Alpine, and Mediterranean, respectively. The author concludes his *Socio-Anthropometry* by stating that in aim and content sociology and anthropology are absolutely separate, even antitheses, and that such a practical science as socio-anthropometry reveals a lack of *modus operandi,* and an absence of proof (on the basis of investigation to date) of the fact that sociological phenomena are ever directly attributable to anthropometric phenomena.

Psychological Sociology.—Prof. Charles A. Ellwood has applied psychological methods and criteria to the analysis of social relations, structure and behavior in *An Introduction to Social Psychology.* He first factorizes the nature of social unity, of social continuity and of social change, and then discusses the functioning of instinct and intelligence, imitation and suggestion, sympathy and consciousness of kind in social behavior. The physical mechanistic phases of collective action are recognized, but the author commences his analysis at the place where these actions become also mental. In the concluding chapters he applies his theories to such a study of social policies in relation to social progress as is most properly called practical sociology. He states that a "sociological theory of progress must find a place for favorable physical and geographical conditions, the biological factors of heredity and selection, the economic factors of the production and distribution of wealth, and the psychic factors of knowledge, standards and emotional attitudes" (*ibid.,* 309). The field which he claims for sociological theory is much more comprehensive than that claimed by some of the other leading sociologists.

Applied Sociology.—Prof. H. P. Fairchild has written an *Outline of Applied Sociology* in which, following Ward, he has subdivided sociology into two branches, pure or theoretic sociology and practical or applied sociology. His definitions, however, vary from those of Ward. He has defined pure sociology as "the study of man and his human environment in their relation to each other". Applied sociology must "take the facts, principles, and laws worked out by the pure science and devise methods of utilizing them to serve some human purpose". The work seems to be built upon Prof. A. G. Keller's interpretation of Prof. W. G. Sumner's social theories (see *A. Y. B.,* 1915, p. 665).

In *An Introduction to Rural Sociology* Prof. Paul L. Vogt has applied some of the useful concepts and generalizations of sociology to problems of rural social economy or rural social welfare. His prime objective is village or community welfare, and its selection is justified in his assertion that "the village is the most natural social aggregation from the point of view of historical tradition and from the point of view of inherited biological tendencies". He claims that because it has this "firm foundation in the inherited instincts of the race" the "small community, well organized, promises to become a very important factor in social organization". He makes many excellent suggestions as to how the socialization of these small communities may be attained. His discussion includes a study of environment, of the vitality of the population, and of religions, but throughout the work he considers these only as they are factors in producing social change.

A timely practical application of sociological theory to public policies in politics is made by Prof. N. L. Sims in his *Ultimate Democracy and Its Making*. The author claims that a certain equality which he has called "ultimate democracy" will be obtained by a balance between community compulsion and voluntary action inspired by the spirit of service.

Theoretical Sociology.—Prof. Carl Kelsey has given us a synthetic study of the physical and biological factors which determine the physical differentiation of men in societies. He first presents the immediate effects of environment on men, then considers the efforts of men to adjust themselves to the environment by struggle and selection, by mutual aid and by the control of nature. He then outlines the differentiation which goes on among groups of people when they are adjusting themselves to environment. Heredity makes this differentiation cumulative and the customary relations of the differentiated individuals within the group become the basis of social institutions and of social organization. The book, which he has named *The Physical Basis of Society*, is principally a synthesis of ideas taken from carefully selected theoretical sources, but in his chapter on "The Nature of Progress" Prof. Kelsey has worked out five sets of tests as to when the "fit" become the "better" or the "best" and evolution becomes progress.

Social Institutions.—Much new source material relating to social institutions has been published, as well as many new studies of the existing material. The following are a few of the most important: "Class and Caste" has been discussed by Prof. E. A. Ross (*Am. Jour. Soc.*, xxii, Nos. 4, 5, 6); *Slavery in Germanic Society During the Middle Ages* is a work by Agnes M. Wergeland; *Negro Education* is the title of a two-volume report of a long investigation conducted by T. J. Jones for the U. S. Bureau of Education and for the Phelps-Stokes Fund. Legal institutions have been discussed by P. A. Speek in an article on "The Need of a Socialized Jurisprudence" (*Am. Jour. Soc.*, xxii, No. 4), by J. H. Boyd in an article on "Socializing the Law" (*ibid.*, No. 6), and by Prof. L. B. Wehle in an article on "Social Justice and Legal Education" (*Am. Law. Rev.* Jan.-Feb., 1917). *Rest Days, A Study in Early Law and Morality* is the work of Hutton Webster. Religious institutions have been discussed by Prof. George A. Coe in his *Psychology of Religion* and *A Social Theory of Religious Education*. In the former book the author gives an interesting definition of society as "persons communicating their desires and purposes to one another, and thereby coöperating with or opposing one another". Prof. E. R. Grove has discussed "An Unsocial Element in Religion" (*Am. Jour. Soc.*, xxii, 657-662), and Allan Hoben has written two essays on "American Democracy in the Modern Church" (*ibid*, xxii, Nos. 3, 4). Prof. E. Durkheim's *Elementary Forces of Religious Life* has been translated by J. W. Swain. Source material on the family is presented in Dr. A. W. Calhoun's *Social History of the American Family*. Miss Mary Richmond's *Social Diagnosis* is an excellent methodological work, its purpose being to set forth accurate methods of social diagnosis, with the family as the primary unit of observation.

CONSTRUCTIVE AND PREVENTIVE SOCIAL WORK

WILLIAM T. CROSS

Social Programmes and the War.—This year, more than any other in the history of organized humanitarian effort in America, has been a period of preventive and constructive action. Almost all branches of service which heretofore have been considered characteristically remedial might well be discussed from this more hopeful standpoint. For some distinctively charitable agencies, the seven months that have passed since the United States entered the war have scarcely been sufficient to enable them to get their bearings in the new situation. Many, however, have for the first time dared to propose programmes of activity in a measure adequate to their needs. On the other hand, organizations distinctively of the propaganda sort have seized the opportunity to take a new tack. Schemes of reform that heretofore have been discounted as being unduly radical, suddenly have dropped back into the conservative class, in contrast to the remarkable readjustments in national and local community life occasioned by the war.

A significant effect of the new *régime* has been that of subordination of many issues in the field of organized social effort to questions that have come to be recognized as of major importance. Local agencies have been getting together for community programmes in a way that was impossible before. Furthermore, in this time of national action, schemes of scientific social work have gained a new sanction. The social hygiene programme appears suddenly to have been adopted by the government so far as army camps are concerned, and indirectly to have received its approval for even broader application. The modern programme of recreation has received somewhat similar recognition. Public Health is suddenly set forward on its programme by the space of a decade. Another beneficent by-product of this new *régime* is the world view that has come to the rank and file of people in this country interested in welfare activities. What goes on in every important belligerent country, not excluding our enemies, is scrutinized as thoroughly as though it were happening in a neighboring state.

National Conference of Social Work.—This year's history of the National Conference of Social Work, and of the subordinate state and local units, is of such importance, in view of the new relationships of constructive and preventive agencies, as to warrant some account in this brief review. By a remarkable prescience arrangements had been made, long before war was declared, for the discussion at the May meeting of this organization at Pittsburgh chiefly of the preventive phases of social work. "Laying the ax at the root of the tree" had been adopted as a slogan for the meeting. With the outbreak of war only a slight change in the programme was necessary to make the occasion of this meeting one for the discussion of social problems of the war.. An unusual series of addresses was given on this subject, and in addition such questions were featured as illegitimacy and child welfare, the standard of living, tax reform, politics and public charities, prison reform, economic conservation, rural community life, etc. Since the meeting of the national body in May, state and city conferences have taken their cue from its discussions. Furthermore, the national organization, after 44 years' use of the term "Charities and Correction", this year changed its name to National Conference of Social Work. A re-organization took place which makes this body in principle the representative of all types of social work in the United States and Canada.

Thrift.—One of the most important effects of the war upon the social order in America has been the revival of feeling for economy. The first objective has been that of saving articles of military use, or of value in war industries. Of scarcely secondary importance has been the necessity of conserving the total supply of necessities of life in the face of a possible shortage of food throughout the world. The consequent emphasis upon habits of thrift among all classes, under the guidance of powerful departments of government has a direct bearing upon the problems of charitable agencies. For years they have been systematically endeavoring to inculcate a spirit of saving and of wise expenditure among their beneficiaries against strong odds in the nature of popular ideals of free spending. Scarcely more than the bare record of the beginning of the era of thrift may be made, as its consequences with respect to constructive social work are yet to be measured. They will, with little doubt, include the establishment of new ideals of public expenditure and governmental efficiency, in addition to changes in domestic habits. The campaigns of the year have included not only the registration of millions of householders for patriotic saving, but the beginning of far-reaching educational efforts. For example, some of the lesson leaflets issued by the federal food administration are designed to show in elementary fashion "how simple were the wants of our early colonial days". Socal workers, individually, and specialists in domestic and budgetary science connected with established welfare agencies have rendered important assistance in this general campaign of economy.

Neighborhood and Nation.—One of the most definite proposals for developing and utilizing neighborhood groups to strengthen the nation in war has been prepared by the American Institute of Social Service. The existence of several hundred national agencies depending upon voluntary initiative, devoting themselves to the manifold individual phases of community well-being and progress, calls for a simplified presentation of principles of service in terms intelligible to the average citizen, who has his contact chiefly with community institutions. Under the programme outlined by the Institute of Social Service a general committee on public welfare would be created, representing the various elements in the population and the different geographical sections of the community. The activities of this committee, all of which would be related to national organization and efficiency, would be subdivided as follows: military, productive resources, special assistance, food conservation and community solidarity.

A National Community Center Conference was held at Chicago the last week in April, with delegates attending from 26 cities. They represented community centers, schools, playground and recreation activities, settlements, boards of education, open forums, boy scouts and other similar social activities. A clearing house for exchange of information regarding community center development was organized, representing jointly the Community Center Conference, the American Playground and Recreation Association, the National Federation of Settlements and the Open Forum Council.

At the meeting later in the year of the National Federation of Settlements, a slogan seemed to be "Nationalizing the Neighborhood". The feeling predominated that the cosmopolitan groups in the neighborhoods of social settlements have a fundamental contribution to make to the future democracy of America. The community center movement contemplates not only a specialized service in the assimilation of immigrants, but also a socialization of the neighborhood, including quite as much the native population. In North Carolina a law has been enacted providing for the incorporation of rural communities. One of the most far-reaching efforts in the direction of community development has been the organization at the People's Institute of New York of a training school for community workers. Various proposals have been made for neighborhood coöperation in the programme of national defense. The Patriotic Service League, organized in New York, is an example.

The Social Unit Plan.—One of the most attractive examples of social engineering developed during the year is the so-called social unit plan. In various cities, under the auspices of both public and voluntary agencies, there has been evinced recently a tendency towards concentration of service to individuals and families in small districts and under the direction of a single authority. Under the social unit plan, not only is social work localized and simplified thus in small areas, but there has been brought in the additional feature of democratic organization and control. Thus the experiment now being given its initial application in Cincinnati has a value from the standpoint of government, of education, of professional efficiency and of social control, which has attracted the attention of students and reformers in many fields. The initial step was the formation of the National Social Unit Organization in New York City on April 11, 1916. This was followed by a survey to determine the best city in which to make trial of the plan. Following the selection of Cincinnati, there was another study and competition to determine the best neighborhood.

In the beginning interest has focused chiefly upon the subject of public health. This is explained by the originator of the plan, Wilbur C. Phillips, as follows: "The social unit plan aims to bring about a genuine and efficient democracy by showing the rank and file how to secure for themselves a clear idea of their own needs and by helping them to organize for the satisfaction of those needs the best skill and the wisest advice available. Practical health work is the point of attack because it is one of the sorest immediate needs and the one of which people are the most conscious." Following the selection of the district, steps have been taken to create for it a democratic organization with a representative form of government. Leaders selected from the several smaller population units will form a sort of house of representatives. Leaders of professional groups in the districts will constitute a kind of senate. Their first task will be to locate in their territory mothers with babies under one year of age, and through friendly acquaintance to persuade them of the value of supervisory care by doctors and nurses. The principle of popular participation thus will become the basis of a birth registration which it is expected will be 100 per cent. efficient, as compared with the customary 75 to 90 per cent. efficiency of birth registration. The district health station will become not only an educational center but a kind of branch city hall.

The plan thus outlined has in view the reaching through educational channels of a much higher proportion of those needing social information than is customary, the collection of more complete and reliable statistics, and the elimination of "multiple visiting" in the sense of intrusion into families by unrelated agencies.

Eliminating the Loan Shark.—The legislature of Illinois this year enacted a law limiting the interest that may be charged upon loans to 3½ per cent., and providing for supervision of the activities of small-loan agencies by the state department of finance. This reform followed agitation of several years by civic bodies and the production of an extensive study of the small-loan business by the department of public welfare of Chicago. This investigation had as its main purposes (1) to ascertain the extent and character of the operations of professional money lenders in Chicago; (2) to suggest ways and means of eliminating their extortionate practices; (3) to suggest methods of meeting the demand for small loans by means of legitimate substitutes. The study included these and a discussion of the devices employed to attract borrowers and secure high returns; the condition of the laws with respect to usury; and the methods used in other communities in order to eliminate the loan sharks.

The survey brought to light the existence of 229 separate loan concerns in Chicago, in 199 of which over 3,000 cases of extortion were obtained. It was estimated that 139 separate concerns actively operating on Nov. 1, 1916, were doing an average annual business of $85,000, or a total of $11,000,000. The lenders were associated in a clearing house which affords mutual assistance in obtaining information regarding applicants and collecting overdue accounts. The usual rate of interest exacted was found to be in the neighborhood of 120 per cent. per annum.

RECREATION

ABBIE CONDIT

General Summary.—The influence which the entry of the United States into the world war will have upon the development of playgrounds and neighborhood play centers is a matter of conjecture. Unfortunately figures are not as yet available to show whether there has been an increase or decrease during the past year in amounts spent for recreational purposes or in the number of play centers started. The correspondence received at the office of the Playground and Recreation Association of America, which acts as a clearing house for information regarding the playground movement, would indicate that American cities, notwithstanding the demands which the war is making upon them, are determined to conserve the health and happiness of their children and to increase the physical efficiency of the older boys and girls through the continued development of playgrounds and recreation centers. During the past summer many of the playground activities have become closely allied to war interests. The planting of war gardens, the stimulating of canning clubs, the formation of first aid and surgical dressings classes, the development of Red Cross activities, knitting and sewing, the organization of Americanization classes and an added emphasis on such activities as hiking, military drills and athletic games have been the natural outgrowth of the war agitation. Books and magazines have been collected for the soldiers by the children of the playgrounds, patriotic pageants have been given and every effort made to stimulate a spirit of patriotic service on the part of the children and young people. Camp Fire Girls, Girl Scouts, Girls' National Honor Guards, and many other organizations devoted to the recreational, physical, cultural and moral development of girls and young people have turned their energies into channels affording a practical expression of patriotism and a preparation for war-time service. There has been a general feeling, however, that in the interest of child conservation, children's playgrounds ought not to be ploughed up for gardens, nor all of the normal activities of the playground usurped by special war activities, however valuable.

It is interesting to note that the reports issued by the United States Census Bureau in 1917 show a total valuation in cities over 30,000 of $1,212,250,117 for parks, playgrounds and other properties used or held for municipal recreation purposes. This does not include privately owned facilities. The total acreage of municipally owned playgrounds in the 213 cities of over 30,000 inhabitants whose work was reported by the Census Bureau was 4,662.1.

There has been during the past year a forging ahead in the development of year-round systems of recreation under the direction of supervisors of recreation, and there has been shown an increasing tendency towards placing these systems under a special municipal recreation department. Among the cities known to the Playground and Recreation Association of America to have developed year-round recreation systems and employed year-round recreation workers are: Kingston, Mt. Kisco, Mt. Vernon, Port Chester, and Tarrytown, N. Y.; Coatesville, Pa.; Oklahoma City, Okla.; Peoria, Ill.; Oshkosh, Wis.; Ludington and Pontiac, Mich.; and Des Moines, Iowa.

Legislation.—The legislation of the past year shows in the main two tendencies: the first, relating specifically to the development of community recreation, has been along the line of permissive legislation giving municipalities broader powers of administration. Michigan, New Hampshire, and New York have passed so-called home-rule bills giving cities, towns and villages the right to acquire land for playgrounds and to equip, maintain and operate such grounds under the School Board, Park Board or other existing body, or under a Recreation Commission which by the terms of the law may be created. The local authorities are given the right to appropriate funds for the purpose of maintaining playgrounds and recreation centers and for the employment of leaders. Since the passage of the New York state law in April, 1917, Port Chester and Tarrytown have created Recreation Commissions, while Scarsdale, Newburgh and Hudson are taking advantage of the law to further their recreational interests. Other towns and cities will soon take the definite action permitted by the bill. Ludington, Pontiac, Wyandotte and Bay City, Mich., have all made use of opportunities offered by the Michigan bill to increase their facilities. Illinois has passed a bill permitting the incorporation of adjoining cities, towns, villages or park districts as joint recreation districts to be administered by seven commissioners appointed by the county judge. Precedence in appointments will be given to persons representing school boards, private schools and city or park boards having playground space or buildings suitable for public recreation purposes. The Board of Commissioners will have power upon satisfactory arrangements with the school authorities to establish in school buildings or on school grounds evening and vacation schools, public playgrounds and other recreational facilities, and to coöperate with other authorities in the management of playgrounds and buildings. In the acquiring of land the Board is to have power of eminent domain. It is further empowered to levy an annual tax not exceeding two mills on each dollar of assessed valuation. A number of ordinances have been passed empowering individual cities to create Recreation Boards or Commissions. Among these might be mentioned the Galesburg and Peoria, Ill., ordinances creating Boards of Recreation Commissioners and the ordinance permitting Des Moines to have a joint standing Recreation Commission. The Lockwood bill providing for the wider use of the school plant in New York marks important progress.

The second tendency in legislation has been along the line of the passage of compulsory military training and physical training laws. New York was the first state to pass a compulsory military training bill and much interest has centered around the Slater bill providing for the creation of a military training commission of which the major-general of the National Guard must be a member, and for such military training of all boys between 16 and 19 years of age, except those exempted, as the commission may prescribe. Any boy lawfully employed for a livelihood is exempted. The Slater bill provides also for the establishment by the commission of state military games and instruction for field training for boys physically fit between 16 and 19 years of age. The Welsh bill, closely bound up with the Slater measure, provides for a system of compulsory physical training for a period of at least 20 minutes a day for all children over eight years of age in public and private schools. A state inspector of physical training appointed by the commission is in general charge of physical training in the schools throughout the state. A syllabus has been issued for the use of teachers, in which the importance of play as a part of the programme has been emphasized. Following the general tendency of the past year towards the development of physical efficiency as a preparedness measure, Massachusetts has also agitated a compulsory military training and physical training bill as a necessary preparation "for citizenship, for industry and for war, should it come". New Jersey has passed a compulsory physical training law, as did Michigan, whose bill provides also for military training in the schools. Pennsylvania passed a law requiring physical training in certain classes of cities, and a similar law was introduced in the Connecticut legislature. Rhode Island and California also have compulsory physical training laws with definite specifications as to the nature and amount of the work.

Neighborhood Play Centers.—The movement for neighborhood play centers making possible evening recreation for employed young people and for adults has continued to grow during the past year. Schools have been opened in increasing numbers after school hours for use as civic and social centers where neighborhood organizations may hold meetings, and for social gatherings for young people and adults. There is a growing tendency to construct schools so that they will be particularly adapted for community use. In a number of communities where it has not been possible for the schools to be used in this way, special recreation buildings have been erected. Increasingly gifts to cities and memorials are taking the form of neighborhood recreation playgrounds and buildings which will serve the recreational life of the entire community. The community house given to the city of San Diego by Miss Ellen B. Scripps includes auditorium, club room, shower baths, kitchen, and motion picture machine, as well as a manual training room and a hospital ward which is the headquarters for a district nurse. Scranton, Pa., during the past year opened a recreation building, the gift of two of the citizens of the community.

Community Recreation.—The past year has seen a great awakening in community spirit as demonstrated in the increased desire on the part of the people in many communities to share in a common recreational life and to celebrate together special holidays and festivals. In no one phase of community life has this been so evident as in the development of community music. Rural communities and small and large cities alike are giving expression to this new form of spirit mobilization through community singing. The conference on community singing held in New York City in June, 1917, brought enthusiastic delegates from all parts of the country. Many community choruses have been organized during the past year. The universities and educational departments of a number of states are doing much to further community music. Kansas, North Dakota and Wisconsin through their educational systems are providing leaders whose full time is given to stimulating community music efforts. The movement to make the best instrumental music available for all has also made rapid strides. San Diego with its outdoor organ recital and San Francisco with its municipally paid organist, one of the best in the country, are demonstrating the value of making the best in music free to all. The report on recreation issued by the Census Bureau in 1917 makes the statement that $584,622 was expended by municipalities for music—free band concerts and recitals—and that for special celebrations cities expended $300,642. The community pageant is another form of community expression which has won for itself a place of importance. Pageants similar to the St. Louis pageant are being given in increasing numbers. Small communities as well as large cities are developing through these means a new civic consciousness. The community Christmas tree introduced in 1912 by the Tree of Lights in New York City has caught the imagination of countless communities. Last year more cities than in any preceding year participated in this justly popular form of community friendliness.

Rural Recreation.—The necessity for health-giving recreation in rural districts, where investigations have shown that the health and physical efficiency of the country child is below that of the city child, has been emphasized increasingly during the past year. In rural districts the organization of rural activities centers for the most part around the schools. The Coöperative Education Association of Virginia is working out especially interesting experiments in rural recreation through the schools, in developing high school coöperative leagues, community meetings, boys' and girls' agricultural clubs, such as Michigan and other states are working out, and in making the celebrations of Christmas, Thanksgiving and other festivals community affairs. The experiments in community recreation which are being made in small communities and rural districts have led in a number of instances to the erection of school buildings especially adapted for community recreation purposes. The so-called "Wheaton idea" recently developed in Wheaton, Minn., is a splendid illustration of this plan. The building, which is three stories high and cost approximately $35,000 fully equipped, has an auditorium also used as a gymnasium with a seating capacity of 4,000, a stage 20 ft. by 40 ft., with complete stage scenery and a motion picture and stereopticon machine. Rooms are provided for a farm bureau, county agent's office and farmers' headquarters. The building also contains a commodious and well-furnished ladies' rest room and library, girls' and boys' locker and shower bath rooms, and well lighted, ventilated and equipped rooms for manual training and other departments. The community school building is becoming a center of all activities for the locality and is used day and night according to a regular schedule by community and school.

The Wheaton idea is said to be spreading rapidly throughout Minnesota. In a number of small communities buildings are being erected exclusively for community recreation purposes. Coldwater, Kans., has opened such a building this year, the cost of which was about $5,000. Parsons and Colony, Kans., have recently erected buildings at a cost representative of $150,000 and $8,000 respectively, voting bonds for the purpose. Universities, colleges and normal schools everywhere awakening to their responsibility towards the rural population of their cities are training play leaders and the teachers who will go into the rural districts, sending out circulating package libraries, publishing pamphlets and sending to rural districts special workers to develop community recreation, agricultural clubs, community singing, music, dramatics and pageantry.

War Recreation Service.—The year 1917, the first of America's participation in the war, has seen the beginning of an experiment in recreation which is unique in the experience of any nation and which marks a new epoch in the conception of recreation as a factor in war efficiency. In an effort to safeguard the new American army and navy in the training camps and naval stations and to prevent the mistakes made by other nations through their failure to keep morally clean the environs of their training camps, the War Department has appointed a Commission on Training Camp Activities, of which Raymond B. Fosdick is chairman. The War Department through this Commission is determined that the communities near the camps and the surrounding area shall be kept morally clean, and laws are being enforced against prostitution and the sale of liquor. But the Commission has wisely decided that wholesome recreation as a substitute for the vicious forms of commercialized amusement must be developed both within the camps and in the communities near the camps to which the men in training naturally turn in their free time. Within the camps the Y. M. C. A., through its recreation huts and athletic activities, has been assigned the task of providing recreation for the men. The recreational and athletic work of the Y. M. C. A. is being supplemented by the athletic directors who are being sent to the camps by the Commission. Believing that singing is to have an important part in helping to win the war, the Commission is also sending to each camp a song leader. Theatre buildings are being erected within the camps, where the best forms of entertainments of all kinds are given, and series of entertainments are being arranged through Chautauqua circuits. Post exchanges on a large scale are being provided inside the camps.

The War Department Commission on Training Camp Activities has realized, however, that no matter how attractive the facilities inside the camps, or how comprehensive the programme of recreational activities, the men will naturally turn to the nearby cities for recreation and a change of scene. And so the Commission has asked the Playground and Recreation Association of America to send a community organizer to each of the cities near the training camps and naval stations to organize the social and recreational life of the city for the benefit of the soldiers and to see to it that the recreation provided in these cities shall be wholesome and that channels shall be opened through which the soldiers and sailors may find substitutes for the normal relationships of life from which their call to duty has suddenly cut them off. To make it possible for the men in uniform to meet the townspeople, to provide for them, through entertainment in the homes and wholesome recreation, an antidote for the homesickness, depression and social loneliness which are so real a menace to the moral strength of the army—these are phases of the problems which must be faced by the community organizers. In the work of fostering and conserving the men's natural relations to the outside world it is the task of the community organizer to coördinate the activities of all the organizations and groups controlling in any way the resources of the communities. Clubs and fraternal orders have been stimulated to entertain their members in camp. Socials, dances and entertainments have been arranged at which the soldiers may meet the young women of the community under proper chaperonage. Entertainment of the men in the homes of the citizens, the provision of khaki clubs and rest rooms, the publication of directories of hotels, churches and points of interest, the establishment of information bureaus, the listing of available sleeping accommodations for the guests of the soldiers and the installation of comfort stations and drinking fountains are all phases of the community programme. The public recreation facilities of the cities such as swimming pools, municipal golf links and athletic fields have been turned over to the soldiers, and athletic meets, carnivals, and tournaments are being held. Automobile rides, community sings and band concerts are being arranged. Every possible effort is being made to make the type of commercial entertainment offered in the cities such as public dance halls and motion picture shows as wholesome as possible. Not only are local organizations at work in the various communities, but many national organizations have joined hands in the undertaking to organize the recreational life of the communities near the camps. The Y. W. C. A. through sending special workers to help in the solving of problems involving girls and young women, the National Red Cross, the Drama League of America, the National League for Women's Service and many other national organizations are, with the Playground and Recreation Association of America, pooling their resources for the benefit of the men in training as they enter the communities for their out-of-camp recreation, in an effort to add to their happiness and welfare and also to their fighting efficiency.

CHILD WELFARE

LAURA A. THOMPSON

Children and the War.—The overshadowing fact of the year affecting the welfare of children was the entrance of the United States into war on April 6. With the passage of the selective draft act the question of the support of the families of the men to be drawn into service became one of first importance to the preservation of home life for large numbers of children. The Federal Children's Bureau began at once an investigation of the care of dependents of enlisted men in Canada and also of the governmental provisions in all the countries at war for aiding the families of men in the military forces. This material, later published by the Bureau in two bulletins, was used by the special committee appointed by the committee on labor of the Council of National Defense to draft a bill for submission to Congress. The Soldiers' and Sailors' Insurance Act which became a law on October 6, provides for a system of family allowances on a sliding scale, according to the number of dependents. The experience of European countries in dealing with some of the other problems affecting child life which war creates is given in three reports published by the Children's Bureau during the year: *Child Labor in Warring Countries*, *Infant Welfare in War Time*, and *Illegitimacy in Europe as Affected by the War.*

Early in June an informal conference of various child welfare organizations and the Children's Bureau was held in Washington and resolutions were drafted for submission to the Council of National Defense setting forth some of the essential measures for the protection of children in war time. These resolutions, adopted by the Council, specially urged the rigid maintenance during the war of all protective standards for the working child, the extension in all communities of maternal and infant welfare work, the recognition of public health nursing as war service and the keeping together of the mother and her young children in the home by adequate allowances. The need of conserving the milk supply, also urged in the resolutions, was evidenced as the year progressed. An investigation made in New York City of how the increased cost of milk had affected 2,200 families each with two children under six years of age showed a decrease in the amount of milk purchased of 25-50 per cent., in some sections the quantity used by infants and young children falling far below the minimum which physiologists regard as the normal milk requirement of young children. It was found that the increase in price had affected also the grade of milk purchased and that the increase in the use of lower grades of milk for infant feeding was coincident with an increase in infant mortality. A special subcommittee on child welfare has been appointed by the woman's committee of the Council of National Defense, with Miss Julia C. Lathrop as executive chairman.

Infant Welfare.—The celebration of Baby Week in the first week of May showed fewer observances than in 1916 (*A. Y. B.*, 1916, p. 390) but with a larger proportion of rural communities and with more follow-up work reported. One interesting feature was the celebration on 46 Indian reservations. In Wisconsin a state campaign is being made to secure one or more visiting nurses for each urban community and a county nurse for women and children in rural districts. In other states also the follow-up work is taking the form of efforts to secure more visiting nurses and infant welfare stations, with better supervision of the health of children in the public schools. An important advance was made in Montana in the law creating a division of child welfare in the State Board of Health "to carry on a campaign of public health education and to take all possible steps for the better protection of the health of the children of the state". Laws for the prevention of blindness by the proper care of babies' sore eyes were passed by Delaware and North Carolina.

Interest in the subject of better birth registration was greatly stimulated during the year by the need of birth records to prove military age and by their requirement also in connection with the Federal child-labor law. The U. S. Bureau of the Census published during the year its first birth statistics report based on registration records in the "birth registration area" established in 1915, covering the New England states, New York, Pennsylvania, Michigan, Minnesota and the District of Columbia. Within this area the birth rate for 1915 was 24.9 per 1,000 population and the infant death rate 100 per 1,000 births, the latter ranging from 70 per 1,000 births in Minnesota to 120 in Rhode Island, and, in cities, from 54 in Brookline, Mass., to 196 in Shenandoah, Pa. Three additional states, Kentucky, Ohio and Virginia, were admitted to the birth registration area in 1917. Maryland was added in 1916.

Children's Bureau.—The Children's Bureau completed in the spring the field work in its statistical inquiry into infant mortality in Baltimore, covering the 13,634 babies born in 1915 (*A. Y. B.*, 1915, p. 389). The combined results of the Bureau's eight previous studies of infant mortality in typical industrial communities were made available in Miss Lathrop's annual report, and showed the same relation between family income and infant mortality that was noted in the Johnstown and Manchester reports. In the eight cities studied, which showed an infant death rate of 116.5 for the 13,000 babies included, more than one-fourth of all fathers earned less than $550 a year and the death rate of their babies was 162.5 or one in six, while only about one-eighth of the fathers earned $1,250 or more and the infant death rate in this group was 62.5 or one in sixteen. The Bureau carried on during the year a number of investigations of maternal and infant welfare in rural counties in Kansas, North Carolina, Montana, Virginia and Wyoming. These show the very inadequate provision in country districts for medical and nursing care of mothers and young children.

Legislation.—In several of the states the year was marked by important legislative gains. Of the 43 measures submitted by the Minnesota Child Welfare Commission (*A. Y. B.*, 1916, p. 389), 35 were enacted into law. The most important of these was the bill centralizing in the State Board of Control authority over all children committed to its care by the courts. A Bureau of Child Welfare was created in the Board of Control and local boards of child welfare authorized for the counties. It was made the special duty of the board to safeguard the interests of illegitimate children, supervise and license all maternity hospitals and infant homes in the state and investigate homes where children are placed out. Important changes were made also in the juvenile court and mothers' pension laws and those governing adoption. In Missouri only eleven of the 42 bills introduced by the Children's Code Commission were adopted, but so much interest was aroused that it is likely that many of the other bills will be passed by the next legislature. Among those becoming law were the state-wide juvenile court and mothers' pension bills and the bill making adoption a court proceeding instead of a private contract. The bill providing county boards of public welfare, which was the chief administrative recommendation of the commission, failed of passage. A child welfare commission was provided by law in Michigan to make investigations and submit recommendations to the legislature. In Tennessee a general child welfare law was passed regulating all aspects of the care of dependent and delinquent children and all agencies dealing with them. The State Industrial School was made a placing-out agency. In New Hampshire an attempt to bring all placing-out under the control of the state was only partially successful. In North Carolina a State Board of Charities and Public Welfare was established to "study and promote the welfare of the dependent and delinquent child and to provide either directly or through a bureau of the board for the placing and supervision of dependent, delinquent and defective children". Authority to appoint county boards of public welfare was given the counties. A new state board was created also in Vermont. Laws regulating the importation of dependent children into the state were passed by Delaware, Pennsylvania, and Tennessee. A unique law was passed in Iowa providing $25,000 annually for a child welfare research at the State University in Iowa City to investigate "the best scientific methods of conserving and developing the normal child".

Dependent Children. — Six more states were added during the year to the list of states, now numbering 35, which have enacted "mothers' pension" laws. The act passed in Arizona providing for the establishment of local boards of child welfare empowered to grant relief to widowed mothers of children under 16 is a substitute for the law declared unconstitutional last year. A maximum of $20 a month is allowed for the first child, $15 for the second and $10 for each additional child, with a limitation of $60 for any family. The Arkansas law authorizes the counties to give aid to widows with children under 14 years, but because of the many counties exempted the law practically applies only to about one-third of the state. In Delaware a Mothers' Pension Commission of nine women, three from each county, is established, with power to grant aid to widowed or abandoned mothers of children under 14, or mothers whose husbands are physically or mentally incapacitated, the aid not to exceed $8 for the first child and $4 for each additional child. The expenses of administration and half of the aid are borne by the state. The Maine law provides for municipal boards of mothers' aid with supervision in a State Board of Mothers' Aid. If the municipal board fails to act upon an application within 30 days, appeal may be made to the state board. The aid is limited to mothers of children under 14 and may not exceed $10 for the first child and $4 for each additional child. As in Delaware, half of the expense of the aid is paid by the state. Under the Texas law widows who have children under 16 may make application to the county commissioners but if the commissioners refuse aid their action is final. The amount of assistance is limited to $12 a month for the first child, $18 for two children and $4 for each additional child. In Vermont power was given the newly created State Board of Charities and Probation to pay widowed or deserted mothers not exceeding $2 per week for the care of children in their own homes, one-half to be paid by the town and one-half by the board.

Under an act in Missouri, aid to mothers of children under 16 is authorized in all counties of the state to be administered by county boards of public welfare or by the county court. Previous legislation has been limited to Jackson county and St. Louis. In several other states amendments adopted covered methods of administration. In Minnesota it was made the duty of the county child welfare boards established by another act to assist the court in considering applications for allowances and in supervising the families aided. In Wisconsin the judge of the juvenile or county court was authorized to appoint child welfare boards to assist in administering the law, while in Wyoming the authority to grant aid was transferred from the district courts to the county commissioners. In Iowa, Minnesota and Montana the age limit of children who might be aided was raised from 14 to 16 to conform with the age when children might legally be employed, in California, from 14 to 15 years. The amount of allowance was increased in Minnesota from $10 to $15 for one child, in Montana from $10 to $20, and in Nevada from $15 to $25 with corresponding increases in the amounts allowed for additional children. In New York City, where the Board of Child Welfare operates on a budget plan for each family, in order to meet the increased cost of living without a lowering of family standards, it was voted in May to increase the allowance for food 12 per cent.

Laws for securing support from the father in cases of desertion were passed in Minnesota, Montana, North Carolina, Pennsylvania and West Virginia, and in cases of illegitimate children, in Delaware, Minnesota, North Dakota, Oregon and Pennsylvania. The Federal law for allowances to soldiers' families includes in its provisions the illegitimate child if acknowledged by the father or if he has judicially been ordered or decreed to contribute to such child's support.

Juvenile Courts.—The juvenile court bill for the District of Columbia, drafted by the special committee of the Attorney-General of the United States, which passed the House last year (*A. Y. B.*, 1916, p. 392), was amended and passed the Senate on Feb. 12. It was confidently expected that this measure, which was so urgently needed to bring the juvenile court law of the District up to the standards of juvenile courts elsewhere, would become law before adjournment but no conference report was made on the bill and it died with the end of the 64th Congress on March 4. Several important changes were made in state laws relating to delinquent children, notably those in Minnesota and Missouri already referred to. In Ohio, building and equipment were provided for the new Bureau of Juvenile Research which will, with the coöperation of mental clinics throughout the state, make mental and physical examinations of all committed children and send them to the institution best fitted to meet their needs. This Bureau was established two years ago but has been largely inoperative for lack of funds. Arizona, Indiana and New Hampshire provided for the destruction under specified conditions of the records in juvenile cases. Legislation relating to probation officers and other matters of administration was passed in California, Delaware, Idaho, Nebraska, Nevada, New Jersey, Rhode Island, South Carolina and Texas. Parental schools were established in Oregon and Pennsylvania, while in Illinois a state farm for boys over 16 was provided. In Arkansas an appropriation for an industrial school for girls was made and the state reform school for boys ordered removed to another site on good tillable land where the boys can have outdoor employment.

Results of the study of the after-careers of the boys released from the St. Charles School for boys, made by the Department of Public Welfare in Chicago were published during the year and showed the very great need that exists for systematic follow-up work. Of the 242 boys who had been away from the school not more than 18 months almost one-sixth had dropped completely out of sight. Of the remaining 203 boys, 85 or 41.8 per cent. were reported as not making good; no information was available for 23; and only 95 or 46.8 per cent. could be reported as making good.

In this last group many of the boys had been released only a few weeks. Practically all of the 76 boys in this group who were earning wages were doing work which held no future industrially.

Defective Children.—An appropriation of $150,000 for a new hospital to be devoted entirely to the treatment of children's diseases and deformities was provided by the Iowa legislature at its 1917 session. This state has since 1915 provided free treatment at the University Hospital for "all children under 16 who suffer from a deformity or malady for which there is reasonable probability of benefit by medical or surgical treatment and hospital care". During the first 18 months of the work about 900 children were benefited, 80 per cent. of the cases showing material improvement. Three other states—Oregon, West Virginia and Wisconsin—passed laws for the care of crippled children, while Ohio established a commission to prepare plans for a state hospital. An investigation made in Illinois showed approximately 3,000 crippled children in that state with no public institution for their care and only three private institutions with a combined capacity of 300. A law passed in South Dakota makes provision at the state school for the blind for the care of blind babies. In North Carolina the sheriffs of the various counties are made responsible for reporting the names of blind children to the state superintendent of schools. In Nebraska provision was made for the home teaching of children who cannot attend the state school, while in Illinois children defective in sight or speech who cannot be educated in the public schools must be sent to public or private institutions for the blind or deaf, transportation and clothing to be provided out of county funds in the case of poor children. State institutions for the care of mentally defective children were established by Arkansas and Delaware.

Child Labor.—In spite of the warnings of foreign experience in permitting the exploitation of children under the stress of war conditions, in several of the states efforts were made to pass laws suspending or relaxing child labor laws during the period of the war. More of these attempts would probably have been successful had it not been for the fortunate circumstance that the Federal child-labor act adopted last year (*A. Y. B.*, 1916, p. 393) became effective Sept. 1. It was made evident early in the year that the government intended to enforce it vigorously. An appropriation of $150,000 was made by Congress on April 17 for the enforcement of the act and the necessary work preliminary to its actual operation. By direction of the Secretary of Labor the administration of the law was placed in the Federal Children's Bureau and a special child labor division was created in that bureau with Miss Grace Abbott as director. As a working basis of coöperation between Federal and state officials the Secretary of Labor appointed as inspectors under the Federal act the state labor officials charged with the enforcement of child-labor laws in the 23 states whose requirements for working certificates were regarded as acceptable under the Federal act. In the other states agents were sent out by the Bureau to issue Federal certificates. It was not to be expected, however, that the new law would be allowed to go into effect unchallenged. An injunction was applied for in the District Court of the western district of North Carolina and on Aug. 29 Judge Boyd in his decision declared the law unconstitutional. The government is carrying the case to the Supreme Court where it will be heard in the March term. In the meanwhile the injunction applies only in the district in which it was issued.

SOCIAL HYGIENE

WALTER CLARKE

Social Hygiene.—The progress of the general social hygiene movement during the past twelve months has been marked by the strengthening of direct and cordial relations between representative organizations touching the subject in its educational, social, medical, and legal phases. The advance made in every field of social hygiene endeavor has doubtless been due in large measure to the advent of the United States into the war and the opportunities for service created thereby. In line with the great spirit of patriotism which has swept this country since our entry into the world struggle, agencies working for social hygiene have offered their services to the Government as clearing-houses for civil-military work, to the end that soldiers and civilians alike be protected from vice and disease.

War-Time Activities.—It is generally conceded that the efficiency of any fighting force depends very largely upon its freedom from venereal disease. Secretary of War Baker, in his letter to the governors of all the states and to the chairmen of the state councils of defense, leaves no room for doubt as to the Government's attitude in dealing with the problems of prostitution and venereal disease as they arise in connection with the military training camps. In the *Program of Social Hygiene for Soldiers*, outlined by the office of the Surgeon-General of the Army, administrative measures as related to the protection of the military forces are grouped under the following headings:

1. *Army Medical Department.*—Military measures for combating the venereal diseases.
2. *United States Public Health Service.*—Epidemiological measures for the control of venereal diseases in the civil sanitary districts.
3. *War Department Commission on Training Camp Activities.*—(a) Law enforcement measures in the department zones. (b) Instruction of soldiers regarding the principles of social hygiene. (c) Recreation measures in the department zones.
4. *Civil authorities.*—Law enforcement, recreation, facilities for treatment of venereal diseases, and protection and control of women and girls.
5. *Non-official agencies.*—Social hygiene activities of volunteer organizations recognized for special services.

Through a coöperative arrangement between the War Department's Commission on Training Camp Activities and the Surgeon-General of the Army, active educational work is being carried on in the National Guard and National Army camps by means of lectures, exhibits, and printed matter. Several civilian organizations, such as the Young Men's Christian Association and the Sub-committee on Venereal Diseases of the Council of National Defense, are giving valuable assistance within and without the cantonment zones.

Among the most striking accomplishments of the Commission on Training Camp Activities along social hygiene lines is the effective closing of more than 25 segregated districts near camps. Vigorous measures for the suppression of prostitution and the traffic in liquor have been instituted by the Commission, which has based its action upon Sections 12 and 13 of the Army Law. The Navy Department's Commission on Training Camp Activities has also carried out an active programme of vice repression along lines similar to that of the War Department's Commission. Throughout the country civilian officials have supported the Government in its effort to protect soldiers and sailors from menacing environments.

The Army Medical Department, through the office of the Surgeon-General, is establishing in and near the cantonments, early treatment stations with the object of minimizing the number of infections developing after exposure, and also for personal advice and warning for the purpose of lessening the number of future exposures. Diagnosis and treatment facilities are afforded for cases of syphilis and gonococcus infections which develop in spite of efforts at prevention. Epidemiological studies are being made of the venereal diseases to discover any new measures which may be applied. Lastly, penalties are rigidly enforced against those who ignore advice and instruction to avoid exposure to venereal disease.

The General Medical Board of the Council of National Defense has appointed a Sub-committee for Civilian Coöperation in Combating Venereal Diseases. The Committee is carrying on a country-wide campaign of education against venereal disease among the civil and military population, through organizations and individuals whose coöperation it has enlisted.

A number of important civilian social hygiene organizations have given their resources to the Government for war service. The New York Social Hygiene Society has continued and enlarged its lecture service, promoted legislation against advertising "specialists", continued the use of its "Health Exhibit" and coöperated with the New York State Department of Health in the preparation of a pamphlet entitled *Keeping Fit to Go Over the Top* for distribution to men through the exemption boards of the state, warning against the evils of prostitution, venereal disease, alcohol, and tuberculosis.

The Connecticut, Maryland, Massachusetts, Missouri, and Oregon Societies, the Red League of Chicago, the Committee of Fourteen of New York, the Committee of Fifteen of Chicago, and other organizations have done valuable work in the lecture field, in the distribution of literature, and general publicity work along social hygiene lines in the various military camps and training stations.

The Young Men's Christian Association, through its War Work Council, has carried out an extensive social hygiene educational programme under the direction of Dr. M. J. Exner. The pamphlet, *Friend or Enemy?*, by Dr. Exner, has been distributed in many of the cantonments in connection with lectures and exhibits.

The American Social Hygiene Association has opened a branch office in Washington, D. C., and many of its staff, increased for war work, have been loaned to the Government in carrying out its social hygiene programme in the camps and cantonments. Dr. William F. Snow, general secretary of the Association, has been appointed Secretary of the General Medical Board of the Council of National Defense, Chairman of the Sub-committee on Venereal Diseases, and is serving on the staff of the Surgeon-General, in the rank of major, being assigned to the division of infectious diseases. In answer to the need for a standard pamphlet for distribution among the men in camp, the Association published *Venereal Diseases: Facts for Every Man.* This pamphlet has been distributed widely and its value from an educational standpoint has been highly commended. The series of articles entitled *Social Hygiene and the War*, appearing in the Association's quarterly magazine, *Social Hygiene*, covers the field of national activities along social hygiene lines during war time. Other recent publications along the same lines are *The Sword of Damocles, Method of Attack on Venereal Diseases, Organization Suggestions for Communities Near Military Places, Vice Repression as a War Policy*, and *The Venereal Diseases: A Sociologic Study.*

Interest in exhibits as a feature of social hygiene instruction has steadily increased. The American Social Hygiene Association has placed its exhibit placards in all parts of the country, at conventions, schools, fairs, Young Men's Christian Association and Young Women's Christian Association lectures, and general group talks to boys and girls. The exhibit sets entitled *Ten Chapters on Social Hygiene* and *Six Chapters on the Venereal Diseases* are in general use. A special exhibit on social hygiene has been prepared for use in military camps. This exhibit consists of 26 panels, effectively illustrated. Copies have been on display at Jefferson Barracks, Mo., Great Lakes Naval Training Station, Ill., Officers' Training Camp, Fort Sheridan, Ambulance Corps Training Station, Allentown, Pa., Camp Upton, Yaphank, N. Y., and at other places.

During the year the press of the country has in an unprecedented manner given substantial publicity to the facts and problems of social hygiene. Important articles have appeared in the *New York Evening Post*, the *New York Times*, and the *New York Evening Telegram.* Other newspapers have supported the Government's policy in editorial comment and have given publicity to the work of the various Government agencies engaged in this field. Numerous articles have appeared in the periodicals of the year.

Bibliography.—Among the important articles, pamphlets, and books of 1917 are the following:

ELLIS, Havelock.—*Essays in War Time: Further Studies in the Task of Social Hygiene.* (Houghton, Mifflin.)
MINER, Maude E.—*Slavery of Prostitution.* (Macmillan.)
MORRIS, Sir Malcolm.—*The Nation's Health.* (Funk and Wagnalls.)

"Program of Social Hygiene for Soldiers. . . . Outlined by Surgeon-General's Office." (Official Bull., Aug. 14.)

Riggs, Surgeon C. E.—"The Prevention of Venereal Diseases at the Naval Training Station, Norfolk, Va." (U. S. Naval Medical Bull., Jan.)

Snow, William F.—"Clinics for Venereal Diseases: Why We Need Men How to Develop Men." (*Social Hygiene*, Jan.)

"Venereal Disease Problem." (*Jour. Am. Medical Assoc.*, Feb.-March.)

"The War and the Venereal Problem." (*Am. Jour. Pub. Health*, July.)

CRIMINOLOGY AND PENOLOGY

Philip Klein

General.—With the utmost care to view the field of the treatment of crime without bias, the impression remains nevertheless that we are experiencing a truly exceptional period of awakened and intelligent public interest and of the materialization of that interest in concrete and practical improvements. Much general activity in the extension of parole, in administrative improvement and in surveys for such improvements has been shown. Possibly more evil conditions are being made public than ever, but that indicates greater interest in uncovering evils rather than actual increase of such evils. So, for example, the publicity regarding conditions in the Trenton, N. J., prison, at the District of Columbia Workhouse at Occoquan, Va., in the New Haven, Conn., county jail, in the Illinois State Prison at Joliet, and the vague rumblings in Massachusetts and Missouri and official criticisms in Oregon are all hopeful signs rather than otherwise. Many local surveys have been undertaken, such as those in Florida, West Virginia, Tennessee and others too numerous to recite. Movements to reform the criminal law in various respects have also been vigorous, and some have been successful. Some clouding of the issue of reform in general by the war and by the intense phases of some political movements has taken place, but on the whole little damage was done. There is no cause, however, for feeling that we are even within view of the millennium. As long as the most glaring shortcomings of society's dealings with crime exist we have no cause for elation. These are particularly: the county jail, that time-honored abomination; legalistic criminal procedure in which the offender is juggled among technical rules and definitions with his fate and the good of the community dependent upon the skill of the jugglers; fines as punishment for crime, a confession to the venality of the community, and in case of non-payment thereof imprisonment, a proof of the superior virtues of money; imperfect and often quite absent grasp of the supreme importance of dealing fundamentally with juvenile delinquency; and the utter failure of any state in the Union so far to take reasonable hold of the problem of feeblemindedness in its full bearing upon crime and upon social pathology in general.

Criminology.—There has been much the same general situation in regard to the study of crime as reported last year. While no epoch-making publication appeared, numerous articles and special studies were prepared either for technical periodicals or in annual reports of institutions, or for conferences and meetings. The series of monographs edited by the American Institute of Criminal Law and Criminology was continued by a contribution from Dr. Healy's pen and a study of women offenders at the Bedford Reformatory (N. Y. State) by Dr. Weidensall has been published. For the practical application of criminological knowledge emphasis has been increasingly on the subject of feeblemindedness. Many heads of penal and reformatory institutions have arrived at the point of considering themselves caretakers of feebleminded more than anything else. A powerful leaven in this direction was supplied by the efforts of the National Committee on Mental Hygiene, especially through its medical director, Dr. Salmon. There was especially active propaganda for the establishment in New York State of custodial institutions for the defective delinquents who, while in fact including psychopaths of all kinds and epileptics are, nevertheless, principally thought of as feebleminded. A special commission of the New York State Legislature, appointed, under chairmanship of Senator Sage, to plan a long-view hospital development system for the State has included in its general programme the defective delinquent. A very interesting comparative study of the woman offender is being carried on by the Bureau of Social Hygiene (headquarters at Bedford, New York) in which equal numerical units of women in various penal institutions and on probation are examined by the psychological and field staff of the Bureau. The results have not yet been published. The detailed studies by the psychiatric laboratory at Sing Sing are continuing and new attempts along the same line are developing throughout the country. The creation of court psychiatrists is also gaining headway and legislative action towards that end has been sought in numerous instances.

The nature of criminal offenses has been slightly affected in the past year. The drug-addiction and crimes arising therefrom, have, according to the testimony of wardens and superintendents not decreased to any extent; the repressive legislation of the last few years seems to have had little if any effect. Little more may be said in reference to prohibition. Political crimes, however, have flourished to an unusual degree. Besides the direct effect of the war, and opposition thereto, of the intensified character of the suffrage movement and of the labor movement, and besides the complicating interaction of these forces, governments have attempted. both in large and in small political units, to deal with these phenomena by indiscriminate repression, and have apparently reaped greater fruition in such crimes. As a consequence of this same state of affairs lynching has come again into its own —more than ever—and has added its black shadow to the already ill-renowned American administration of justice. Moreover, because of the political traditions of this country the differentiation—long and reasonably practiced in bureaucratic Russia—between simple and political offenses failed to be made by the judicial and penal authorities.

Lynchings.—The total number of lynchings for the year was 38, of whom 36 were negroes and two whites; 37 were male and 1 female. These totals and the analysis following were supplied by Mr. Monroe N. Work of the Division of Records and Research of Tuskegee Institute.

Twelve or a little less than one-third of those put to death, were charged with rape or attempted rape. The offenses charged against the whites lynched were:

Rape and murder	1
Fomenting strikes	1

The offenses charged against the negroes were:

Attempted rape	5
Rape	6
Murder	3
Killing officer of the law	2
For not getting out of road and being insolent	2
Attacking women	2
Disputing white men's word	2
Entering woman's room	2
Wounding officer of the law	1
Molesting women	1
Stealing coat	1
Intimacy with woman	1
Killing man in altercation	1
Accidentally killing child by running automobile over it	1
Vagrancy	1
Wounding and robbing a man	1
Attacking an officer of the law	1
Opposition to war draft	1
Insulting girls	1
Writing insolent letter	1

The states in which lynchings occurred and number in each state were as follows:

Alabama	4	Montana	1
Arkansas	4	Oklohama	1
Arizona	1	South Carolina	1
Florida	1	Tennessee	3
Georgia	6	Texas	6
Kentucky	2	Virginia	1
Louisiana	5	Wyoming	1
Mississippi	1		

These are lynchings as we have understood them heretofore. There should be added, however, in a record of American lawlessness the disgraceful slaughters in East St. Louis, Ill., the illegal mob deportation of over a thousand mine workers for alleged I. W. W. sentiments, the brutal maltreatment of the Ohio statesman, Herbert Bigelow, by a band of lawness ruffians, and other numerous instances.

Prison Conditions, Amelioration, Administration, Labor, Etc.—It seems a fundamental American practice that great improvements or changes in administration generally come after or because of some public scandal or exposure. This has been true to a very large extent of prison matters. The latest instance is that of the New Jersey State Prison at Trenton. Exposures by two ex-prisoners of that institution, Boyd and Quinlan, both intellectual men who had been incarcerated because of industrial and social agitation and the subsequent inquiry by the *New York Evening Post* have disclosed the following:

> That two, three, and even four men are confined together in the same cell in violation of the law; that dungeons exist and that men are incarcerated therein and given only bread and water twice a day; that men have been chained to the walls of underground dungeons; that women convicts are confined with men, and that cell 55, wing 4, is kept apart for that purpose: that women prisoners eat, sleep, and live in their cells and work on sewing-machines in the corridor outside their cells; that there is no dining-hall and that men are fed in their cells or in the corridor; that the cries of convicts protesting against their food have been heard by those who passed through the streets outside; that the men have only half an hour's recreation a week, and that the recreation-yard for fourteen women convicts is larger than the recreation-yard for 1,200 men; that many cells are dark and ill-ventilated; that in the newest wing seventy cells are so damp that they cannot be used, and that on occasions the corridor is so wet that the keepers have to wear rubbers; that a cell-building erected in 1835 is in use today; that the State's wards were confined up to last Monday in an old wing that the State Board of Health had condemned as unfit for human habitation; that consumptives circulate with the well, exposing them to contagion; that the first offender is thrown with the habitual criminal; that a youth was released in December who came to the prison a boy of thirteen years, wearing short trousers; that men are punished by being put face to the wall, and that sometimes they are kept there all day without food; that convicts may not receive fruit; that a commodious bathhouse with hot and cold water supply is used only two months in the year; that for ten months in the year the convicts are given only a bucket of water once a week in which to bathe, that after bathing they must wash their clothes in this water and then wash out their cells; that a salaried school teacher is employed, but that there is no schoolroom or furniture, in violation of the law; that three chaplains are employed, but that the chapel seats only 350 persons, while the prison population is usually in excess of 1,300; that the Board of Inspectors turns the convicts over for work on the public roads at the rate of $1.25 a day, which is paid by the taxpayers, but that the Board turns the convicts over to private contractors at 35 cents a day; that while the contract shops are put in operation daily, the shop, equipped at a cost of more than $12,000 to make socks and underwear for inmates of State institutions is idle and has been idle for some months, and that the salaried instructor has nothing to do; and, finally, that it is a fact that convicts are supposed to be paid 2½ cents a day for their work in prison and that they do not get it.

A commission appointed by Governor Edge of New Jersey to look into the matter after some hearings made a preliminary report which included the following recommendations:

> (1) The establishment of a psychiatric clinic at the prison so that the imbeciles, the mentally deficient, and the diseased may be segregated.
>
> (2) That land adjoining the prison and owned by the State be added to the prison grounds for the purpose of according recreation space for the prisoners.
>
> (3) That wing 3 be reconstructed to provide a dining-hall and assembly-room.
>
> (4) That an efficient prison school be established.
>
> (5) That as many men as advisable be transferred to the prison farm at Leesburg or put on road work.
>
> (6) That the dungeons be bricked up.
>
> (7) That the law providing for the separate confinement of prisoners be obeyed.
>
> (8) That a grades and meriting system be established.
>
> (9) That a covered way to the bathhouse be built so that there may be no excuse for failure to use it all the year round.
>
> (10) That the State-use plan be installed so far as possible, and that the contracts be diminished proportionately.
>
> (11) That the term of the Commission be extended to January, 1918, so that an exhaustive examination of conditions in all the penal and correctional institutions can be made and a comprehensive programme of reform drawn up.

The Commission was continued and is making an elaborate study of all aspects of the question, going beyond the letter of their appointment and will report with full recommendations to the New Jersey Legislature of 1918.

The case of the New Haven (Conn.) county jail is interesting because the investigation did not follow any definite scandalous exposures, but rather an intense civic interest. The findings first of a Committee of the Civic Federation, and later of two invited experts, Dr. H. H. Hart and Dr. O. F. Lewis, show what may exist in our penal institutions under *not scandalous* conditions. One of the most interesting facts found was that while the county was receiving a lump sum of $7,000 per annum for the contract labor of its prisoners, an estimation by expert accountants of the business involved showed that in reality, for the year preceding the investigation, the "county not only received nothing for the labor of its prisoners, but actually paid to the chair company about $1,000." A few of the forty recommendations made by the two expert examiners mentioned are of more than local interest and are therefore quoted herewith:

8. If the State of Connecticut is still to imprison for debt, certainly persons held for debt have distinct rights of decent treatment. They should not be required or allowed to mingle with other prisoners convicted of crime.

9. No further contract for the leasing of prisoners to a private company or individual, vested with the power of discipline of prisoners, should be entered into or renewed by the county.

11. The sole power of discipline of prisoners should be held by the jail authorities.

7. Insane persons should be at once removed to a hospital.

15. Remove the metal shutters from the cells in the "cooler". This will render the use of the shutters impossible. No insane persons should be placed in the "cooler" cells. Hospital treatment should be secured for them.

16. Fire escapes should be erected on the outside of the Women's Jail, said fire escapes to be within the prison yard. The window bars should be set on hinges, and padlocked on the inside. There should be a matron on duty at all times within the Women's Jail. She should carry the key of the fire escapes.

18. Male and female prisoners should not under any circumstances be employed together.

23. The privileges of the yard should be had by the inmates for a considerable part of Sunday, especially because there is so little free time during the rest of the week. Some daily open-air exercise should be had by all inmates. This recommendation applies to both male and female inmates. The women's yard is small, but can be used.

25. There should be a laundry for the necessary washing of all garments of inmates.

26. Each inmate should be given two sets of underwear. One should be washed while the other set is being worn.

30. All inmates should be required to bathe at least once a week, and should have opportunity to bathe more often.

31. Individual towels and toothbrushes should be furnished.

35. Simple classes in the three R's should be established, especially for the illiterates.

Less striking activities of a miscellaneous nature are reported from many states, activities representing almost all aspects of prison work. In Nebraska Sunday suits of blue serge with white collars and black neckties have been permitted in the State Prison at Lancaster. In Missouri Saturday afternoon baseball has made its *début*, although at the expense of an additional half hour of work daily, to make up for lost time. This is but part of a general reform administration under the new warden, Wm. R. Painter, formerly lieutenant-governor of Missouri. The organization of self-government, the opening of the institution to the public, the transfer of the commissary from private hands to the state, and an educational census of the inmates are further rays of a new dawn. Self-government has also made its way into the new naval prison at Portsmouth under its new warden, Thomas Mott Osborne, renowned for his work at Sing Sing, N. Y., and has been adopted in the new Westchester county (N. Y.) penitentiary under warden Derrick. To counterbalance the above, some restrictions have been imposed upon the self-government system in Sing Sing, although apparently for purposes of regulation more than repression. The visiting at the latter institution, which was one of the most marked features under Warden Osborne, has almost entirely been eliminated, incidentally cutting off an important source of revenue of the inmate organization. The ephemeral organization of self-government of a kind at the New York City Penitentiary is no more. More scientific organization of the administrative aspects of the prison work in New York City has raised the Department of Correction of that city into a rank deserving recognition throughout the country. In Connecticut a commission appointed by Governor Marcus H. Holcomb investigated conditions at the State

Prison at Weathersfield, and reported that institution inadequate for modern correctional work and recommended the purchase of a site and erection of a new prison without loss of time, and at an expense if necessary, of a million dollars. The Massachusetts State Prison at Charlestown has inaugurated an extra hour of recreation on Wednesdays in addition to the Saturday and Sunday periods. The Washington State legislature appropriated a fund for the installation of a new ventilation system in the State Prison at Walla Walla. Oregon has been strenuous in publicity and other pressure to obtain a new and reasonably sanitary state prison.

New educational ventures are noted in at least three cases in the past year. At the request of some of the prisoners at the Ohio Penitentiary, the warden has arranged for courses in journalism. Prof. C. H. Getz of the Ohio University College of Journalism has volunteered weekly instruction, reporters from Columbus offered to lecture, and university students will loan textbooks. The extension courses given by the Home Study Department of the Kansas State Agricultural College to male prisoners at the State Penitentiary have been opened to the women prisoners as well, the latter taking especially cooking, sewing and nursing. In Pennsylvania, the *North American* reports that 51 inmates of the Eastern Penitentiary received certificates in engineering, after completing regular courses of the kind offered at the State College. The courses were given by the latter in coöperation with the Y. M. C. A., mainly by correspondence, but supplemented by personal instructions by an inmate approved by the state authorities.

The past year has seen some progress in prison labor also. New Jersey began a serious campaign to end the remaining labor contracts still in force at the State Prison; its road work was considerably extended and the State Farm at Leesburg established itself as an unquestioned success. Printing as an industry was introduced on a large scale in the reformatory, against feeble opposition by labor unions. Special legislation making possible extended farm and road work by county jail and workhouse prisoners was passed, including provisions for the paroling of prisoners by the county in care of farmers in lieu of incarceration, somewhat along the plan instituted some ten years ago by Sheriff Tracy in Vermont. A great deal of valuable work has in fact been performed on road and farm in a number of counties of New Jersey. In Tennessee, Governor Rye signed a bill long agitated by the trade unions, abolishing the convict labor lease system, beginning Oct. 1, 1918. (For war work see *infra.*)

In matters of general administration and management important changes are heard of from Illinois, Ohio and Maine. In Illinois a new State Department of Welfare has been organized, with a number of coordinate bureau-executives within the department, of which a superintendent of Prisons, a superintendent of Pardons and Paroles, and a State criminologist are of special interest in this connection. The appointment of John L. Whitman to the first-named and of Dr. Herman Adler to the last-named position has received general approval. Ohio's legislature of 1917 created a bi-partisan State Board of Clemency consisting of two members and a staff, all of whom are required to devote their entire time to the work of pardons and paroles. This is a long step in advance towards reasonable dealing with that subject. Maine created a non-partisan prison board of three members, each appointed by the governor with the consent and advice of the Senate for a period of six years. At the same time the board was authorized to undertake construction and road work with prison labor.

Capital Punishment.—It is reported that the State of Missouri abolished capital punishment, thus joining the honor roll now consisting of Kansas, Maine, Michigan, Minnesota, North Dakota, South Dakota, Oregon, Rhode Island, Washington and Wisconsin. One retrogression is recorded in the case of Tennessee, which restored capital punishment. Bills have been introduced and killed during the year in Colorado, Utah, Vermont, Massachusetts, West Virginia, Indiana, New York. Probably the same fate has overtaken bills in Delaware, North Carolina, Pennsylvania, New Hampshire, Illinois and Nebraska.

County Jails.—This perennial blot on American penal systems is still far from extinction. Almost at random one might pick out any state in the union and be perfectly certain to find not only the system as a whole vicious, but institutions in plenty that would answer a description—now almost standardized—of a factory of crime and disease. Miss Abbot's denunciation of Illinois jails following Miss Hindrichsen's report on the same is not encouraging. Dr. Oates, the recently retired inspector of jails in Alabama, has this to say in his report for 1916:

> It is a sad commentary on our state, but a fact, nevertheless, that our jails are money-making machines. The vile, pernicious, perverting fee system beggars description, and my vocabulary is inadequate to describe the deleterious and baneful effect. It inculcates into the management of our jails greed for the almighty dollar; persons are arrested because of the dollar, and shame to say, are frequently kept in captivity for months in steel cages for no other reason than the almighty dollar. The fee system is a disgrace to Alabama.
>
> This law relating to the feeding of prisoners which the Legislature undoubtedly intended to result in the prisoner being amply fed, has resulted in some cases in starvation. It is legalized graft. It has made the fee for feeding the most lucrative perquisite in the sheriff's office. A number of sheriffs have told me that but for the feed bill the office of sheriff would not be worth anything to them. One sheriff has admitted that he made over $25,000 net profit on his feed bill alone in one year.

The Nebraska State Board of Charities and Correction reports less than a dozen modern jails out of 93. The Ohio Board urges with great emphasis the discontinuance of county jails and the substitution in their stead of state district workhouses, recommending that the present local workhouses—eight in number—be taken over for that purpose by the state. A survey in Michigan disclosed recently that out of 152 inmates in 10 county jails, 18 had positive tuberculosis and 24 arrested or suspended, a total of 27.6 per cent., living under conditions that are like a hotbed for germs. Indiana so far stands alone among the states in having abolished the system as a whole. Improved legislation and methods have indeed brought some relief by extending farm and road work (*e.g.* New Jersey, New York, Vermont, Wisconsin, etc.), but on the whole the evil remains unabated.

Courts, Probation, Parole, Etc.—While the importance of prison reform as such is, of course, patent, the most important thing, after all, remains the treatment of the offender at his original contact with law after arrest and before sentence to an institution. In this category belongs the matter of the *public defender.* There is a growing conviction, based upon the accumulation of evidence and upon the successful work of the public defender in Los Angeles, Cal., that if justice is to be done to the individual and therefore to the common interest, it is necessary to have a public defender with powers parallel with those of the public prosecutor. The movement for public defenders is fast gaining. Within the past year a public defender was appointed in New Hanover County, N. C. In Tennessee former Governor Malcolm R. Patterson based his pardon record on the inadequate defense obtained by indigent prisoners at court. Bills for the establishment of that office have been introduced unsuccessfully in California, New York, Tennessee, Michigan, Colorado, and for Denver, Col. In New York City an exceedingly interesting experiment was inaugurated in April, 1917, which promises to clear up in a very definite way the controversy as to the necessity and practicability of such an office. A Volunteer Defenders' Committee was organized, with funds guaranteed for a period of three years. Two high-grade, experienced lawyers, aided by a staff of some three investigators and the requisite office staff, have undertaken to defend any indigent defendant in the New York County Court of General Sessions. Within the first two months the work grew to proportions almost beyond the capacity of the staff. The final conclusions of this organization are looked forward to with a great deal of interest.

Probation, one of the watchwords of the new penology, is steadily gaining ground and respect. In states where it is fairly developed, the saving on restitution moneys alone—not counting the saved institutional maintenance—is enough to defray probation expenses. Massachusetts collected almost twice the maintenance cost of probation in fines and restitution in 1916. For the proper supervision of probation work it has been found necessary to have some central body in each state control, develop and expand the work. Such bodies do not, however, universally exist. The Illinois Probation Officers' Association recently appointed a committee of five to prepare a bill for the organization of a probation commission. It is exceedingly important that every state have such a body. Disappointing was the failure to obtain in the last Congress a Federal probation law. The bill was lost by failure to obtain executive approval after it had passed both houses of Congress.

Of supreme importance is also the matter of dealing with juvenile delinquency. Always important, it assumes even greater proportions now that juvenile crime has been increasing by leaps and bounds. It is gratifying, therefore, to note the great progressive legislation on this subject in Minnesota; the adoption of a constitutional amendment in Louisiana establishing a juvenile court in every parish; the passage of legislation in the same state that will make possible the prosecution of parents for contributory delinquency in children's cases; the all but successful passage of legislation in New Jersey in 1917 that would have added greatly to the usefulness of its present system; and the establishment in Boston of the Judge Baker Foundation under the directorship of Dr. Healy, formerly of Chicago.

Legislation was obtained in Louisiana (1916) introducing the indeterminate sentence and parole; the establishment of a Board of Clemency in Ohio was referred to above.

New Institutions.—The most advanced penal institution along architectural lines was opened in May of this year at East View, Westchester County, N. Y. It is built on the separate unit, outside-cell plan, of brick, hollow tile, and concrete. Its grounds occupy part of a 400-acre plot which constitutes a county unit including the almshouse and tuberculosis hospital under a commissioner of Charities and Correction The different parts of the county unit are separate and not within view of each other, but constitute an economic and administrative whole. The most remarkable feature is the outside-cell or room plan, hitherto untried on that scale in this country. Another venture in outside cells is represented by the Bronx County (N. Y.) Jail and the Erie County (N. Y.) Jail in New York City and Buffalo respectively. These institutions will be carefully watched by both advocates and opponents of the outside-cell plan. Legislation was passed in Connecticut for a Woman's Reformatory.

Personal.—Dr. J. T. Gilmour, formerly Warden of the Central Prison of Toronto, and latterly of the Guelph Industrial prison, has been appointed inspector of paroled prisoners for the Province. T. M. Osborne, formerly warden of Sing Sing Prison, was requested by Mr. Daniels, Secretary of the Navy, to make an investigation of naval prisons, and was subsequently appointed warden of the naval prison at Portsmouth. Franklin B. Sanborn, the venerable prison reformer of the last half-century, known and honored in this and foreign lands as a great pioneer and leader died Feb. 24 of this year. Prison reform in this country is inseparably associated with his name. New appointments during the year include that of George A. Storrs, formerly sheriff of Utah County, to the wardenship of the Utah State Prison; John V. Chapman of the Massachusetts State Reformatory to the wardenship of the Rhode Island State Prison to succeed Almer J. Davis, resigned; John L. Whitman to be superintendent of Prisons for Illinois; Dr. Herman Adler to be state criminologist for Illinois; Calvin Derrick from wardenship at Sing Sing to wardenship of the new Westchester County (N. Y.) penitentiary; Mr. J. Mulheron as principal keeper of the New Jersey State Prison at Trenton. Dr. George W. Kirchwey former warden of Sing Sing has been adviser to the New Jersey Prison Inquiry Commission and is conducting the studies under the commission. He has also joined the staff of The Prison Association of New York. Dr. Katharine B. Davis resigned her chairmanship of the Parole Commission for New York City to accept the general directorship of the Bureau of Social Hygiene.

Prisoners and the War.—A new relation of the prisoner to the community has been established in connection with the war needs of the country. Recognizing the importance of the matter, the executive committee of The American Prison Association called a special meeting for July 2 and 3 at Washington, D. C., to which special delegates were sent by a number of governors. The meeting passed resolutions indicating the scope and nature of service that prisons could render by way of farming and industries, urging the repeal of an executive order which forbade the purchase of prison-made goods by the national government, and offering the services of the American Prison Association as a body and individually to the government on call. Meanwhile actual extension of agricultural and industrial activities in direct relation to and under stimulation of the war took place throughout the land. Pennsylvania, Westchester County, N. Y., St. Louis, New Jersey, Ohio, Indiana and hundreds of counties and cities concentrated on agriculture; Indiana went into the slaughtering and packing, some institutions into the hog and chicken-raising business. Many inmate-bodies of institutions offered their services directly for the battle front, and great numbers of prisoners subscribed for Liberty Bonds. There has not yet, however, been an organic plan developed for the systematic utilization of the prisons as a whole in the interest of war-efficiency.

On December 4th, however, a bill was introduced in the Senate by Mr. Smith of Georgia, promoted by Mr. E. Stagg Whitin of the National Committee on Prisons and Criminal Labor, which provides for the employment with compensation of inmates of all or any penal institutions on work rendered necessary or required by the military exigencies of the country. This bill has a fair chance of passage and is of more than passing importance. It has already received—so rumor goes—executive approval.

Miscellaneous.—Prisoners' aid has been considerably facilitated during the past year by the extraordinarily favorable conditions of the labor market, so that this generally most difficult function of philanthropic organizations experienced unusual success. Considerable excitement was created in the prison world during the year by the riots in the Illinois State Prison in Joliet and at the District Workhouse at Occoquan, Va. In the former some 200 prisoners defied the authorities, set fire to shops and had to be subdued eventually by state militia. The riots gave rise to considerable controversy as to causation. Some blamed sentimental letter-writers; others decried too much modernism; some blamed the reactionaries; while still others openly laid the trouble at the door of political meddlers. At Occoquan the plausible principle of democratic equality applied to the treatment of suffrage pickets who were required to submit to the same methods generally applied to the usual run of prisoners gave occasion to serious troubles, involving fighting, hunger-strikes, and political complications.

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THE LIQUOR PROBLEM

JOHN KOREN

Legislation.—Two federal acts have been passed that vitally affect the traffic in intoxicating liquors. One forbids the manufacture and importation of all spirituous liquors for beverage purposes during the period of the war. The act does not restrict the sale of distilled spirits, but the cessation of manufacture and the extraordinarily heavy tax placed on liquors withdrawn from bond will necessarily in course of time reduce the consumption of distilled beverages to a minimum, much depending upon the duration of the war and future legislation. Another act of far-reaching consequences was attached to the Post Office Appropriation Bill. It forbids all methods of advertising intoxicating beverages through the mails in the territories under prohibition or soliciting orders for them, under heavy penalty. Moreover, it makes it punishable to "order, produce or cause intoxicating liquors to be transported in interstate commerce except for scientific, sacramental, medicinal and mechanical purposes into any state or territory in which the manufacture or sale of intoxicating liquors is prohibited." This act further strengthens the so-called Webb-Kenyon act, the purpose of which was to stop the transportation of liquor into dry territory as an article of interstate commerce. To supplement the Federal acts, several states have adopted so-called bone-dry amendments to their prohibition laws. Thus, for the first time, the different authorities are armed with power eventually to check the traffic in intoxicants.

Two states have been added to the "dry column" by enacting statutory prohibition in the early part of the year to become effective in 1918—Indiana and New Hampshire. At the November elections New Mexico adopted prohibition by a large majority. In Ohio, where prohibition was voted upon at the same time, it was defeated by a small majority. The liquor issue also came to the front during elections in Iowa and Virginia. In the former, a constitutional prohibition amendment was submitted to the voters, but lost by a small margin. The campaign for the governorship in Virginia was virtually fought out on the liquor issue and resulted in the election of a candidate for governor who is opposed to the present prohibition law and the method of its enforcement.

So many changes have taken place in the alignment of the states on the prohibition question that it is worth while to re-state how they stand at the present time. Prohibition was effective at the close of 1917 in the following states (those marked with an asterisk having constitutional and the others statutory, prohibition): Alabama, Arizona,* Arkansas, Colorado,* Georgia, Idaho,* Iowa, Kansas,* Maine,* Mississippi, Nebraska,* North Carolina, North Dakota,* Oklahoma,* Oregon,* South Carolina, South Dakota,* Tennessee, Virginia, Washington, and West Virginia.* In addition, prohibition becomes effective in 1918 in Indiana, Michigan, Montana, New Hampshire and New Mexico. Two states are to vote on constitutional prohibition in 1918 under acts passed by their respective legislatures, namely, Minnesota and Wyoming.

The following states have local option combined with their liquor license laws: California, Connecticut, Delaware, Florida, Illinois, Kentucky, Louisiana, Massachusets, Minnesota, Missouri, New York, Rhode Island, Texas, Utah, Vermont, and Wisconsin. In Michigan, Montana and New Hampshire local option laws will operate until some time in 1918, when prohibition supersedes them. Maryland, Nevada, New Jersey, Pennsylvania and Wyoming have no provisions for local option except that Maryland allows certain counties to exercise local option as to the sale of intoxicants.

Several sharply contested local option campaigns have taken place during the year. Thus, a strong effort was made to make dry the cities of Wilmington, Del., and Bridgeport, Conn., but in both cities local prohibition was defeated. The December elections held in a number of Massachusetts cities showed a decided trend away from prohibition. The cities of Fall River, Fitchburg, North Adams, and Taunton, which last year went dry, returned to a license policy. A strenuous effort was made to win the city of Springfield for license, but without success. In several municipalities the license vote showed a substantial increase, while in only one city, Salem, was there a notable addition to the no-license vote.

Production and Taxation of Liquors.—During the fiscal year ending June 30, 1917, there were withdrawn for consumption, according to the preliminary report of the Internal Revenue Office, 164,665,246 gallons of spirits of all kinds, an increase over the fiscal year ending June 30, 1916, of 28,438,718 gallons. This includes more than 100,000 gallons of spirits produced in Porto Rico. How much of this quantity entered into actual human consumption cannot be stated, for undoubtedly in view of the pending cessation of distillation a much greater quantity was withdrawn for beverage purposes than would otherwise have been the case. The Internal Revenue Office remarks that "The quantity of wine, liquors, cordials, etc., on which taxes are paid cannot be stated, for the reason that the rates of tax imposed by the Acts of Oct. 22, 1914, and Sept. 8, 1916, vary according to the kind of product and size of container; and, furthermore, as the stamps provided for same are interchangeable, the quantity is not indicated by the amount of the tax payment."

The production of fermented liquors for the fiscal year ending June 30, 1917, was 60,729,509 barrels, an increase of 2,165,001 barrels over the preceding year. It is evident that this increase entered into actual consumption as beer is a product that is used immediately upon being manufactured. The total Internal Revenue collections on the manufacture and sale of distilled spirits for the fiscal year under consideration were $186,563,054, which is an increase of $31,432,145 over the preceding year and marks the largest income from this source in the history of the Revenue Office. The collections on fermented liquors (less additional tax of 50 cents per barrel) were $61,532,025.

Since the full report of the Internal Revenue Office is not available at this writing, nothing can be stated in regard to the amount of distilled spirits that entered into the industries and manufactures, that was exported or that was denatured. And it would be idle to speculate about the huge quantity of distilled spirits that must have been withdrawn for human consumption, as the conditions under which it took place have been made abnormal by the exigencies of the war. How far the new legislation prohibiting the importation of spirits into dry territory and the "bone-dry" amendments attached to state prohibition laws have been effective, cannot be stated definitely. But there is little room for doubt that they have made access to distilled spirits increasingly difficult in proportion as consistent effort is made to enforce the laws. The prohibition against distillation for beverage purposes must necessarily prove a tremendous factor in the drink situation, the full effect of which will make itself felt in the future, although the results are already beginning to be felt.

SOCIAL WORK OF THE CHURCHES

Clinton Rogers Woodruff

Roman Catholic.—The report of the Rev. Peter E. Dietz, secretary of the social service commission of the Federation of Roman Catholic Societies, stated that a weekly service had been sent to the Roman Catholic and labor press of the country. During the past year Father Dietz has given practical social training to prospective social workers, and all the graduates are now in a position to give time and energy to social service.

The work of the bureau is carried on under the following heads: Education and Entertainment, Civics and Law, Social and Industrial Relations, Charities and Social Service, Public Morality, Press and Publicity, and Organization and General Bureau. A plan for the social service organization of the Church in America along diocesan and arch-diocesan lines is being considered by the hierarchy: Social service rallies were held in connection with the Kansas City meeting of the Federation, the secretary of which reports that there has been a strong support of the Red Cross by communicants of the Church. A war commission has been created composed of all the bishops and archbishops of the United States. Its affairs will be directed by an executive committee consisting of one delegate from each archdiocese in the country. The Rev. John J. Burke, C.S.P., is chairman.

Episcopal.—Like most other religious and social agencies, the Joint Commission on Social Service of the Episcopal Church has during the past year given chief attention to problems raised by America's entrance into the world-war. It has issued three War Service Bulletins, *War Relief*, *A War Service Program for the Church*, and *The Training Camp Problem*, which have been distributed to the clergy generally throughout the country. It has specially recommended local coöperation of parishes in training camp communities with the various governmental and voluntary agencies which are attempting to make and keep clean and wholesome the various centers where soldiers and sailors are brought together; also efforts on the part of parish clergy throughout the country to keep in touch with their own men who have been called into service, by supplying them with magazines and comforts, by sending them personal letters and by recommending them to the care of local churches and chaplains.

The Commission's war programme, in general, includes not only war relief and the welfare of the fighting forces of the nation, but food conservation, maintenance of present industrial and educational standards, and the safeguarding of democratic institutions and ideals during wartime, as well as the equitable distribution of the costs of war. To these various ends the Commission has coöperated with the Federal Council of the Churches of Christ in America, the Young Men's Christian Association, the Federal Commission on Training Camp Activities, and some half dozen Episcopal agencies interested in war service, including the recently appointed War Commission of the Church.

In addition to its war work, the Commission also feels the necessity of maintaining as far as possible the normal social-service activities of the Church at large, and partly to that end has added to its Social Study Series, begun last year, another number on *The Social Aspects of Church History*, during the first three centuries, and has further contemplated the issuance of a monthly or quarterly bulletin devoted to the propagation of social service interests. It has also during the year announced a prize essay competition open to the senior classes in the Episcopal theological seminaries throughout the country.

Upward of 50 of the 85 dioceses and missionary districts throughout the country are now contributing to the Commission's support, and it is hoped that by another year practically all will be giving their aid.

Baptist.—The year has been marked by a widening interest in social work on the part of Baptists, the National Social Service Commission having succeeded to a measureable degree in overcoming the indifference of the denomination. This work has been under the guidance of the Rev. Samuel Zane Batten, D.D. (Philadelphia) as chairman of the Northern Convention which works through the following departments: Rural Communities, Immigration and Foreign Speaking People, Temperance and Social Hygiene, Social Education, Industrial Problems, International Peace, and National Security. All these carry on special investigations. The Southern Baptist Convention has appointed a commission on social service, with the Rev. A. J. Barton, D.D., of Waco, Texas, as chairman. This commission has issued literature bearing upon the various aspects of social work. The American Baptist Publication Society has had the work of social service officially committed to it by the Northern Convention and has created a department with Dr. Batten as secretary. Some of the state commissions are doing notable service, especially those of Massachusetts and Connecticut. During the year much attention has been given to conditions created by the war. The Commission has issued a number of pamphlets dealing with the subject.

Society of Friends.—A Friends' Social Order Committee has been appointed by the Philadelphia yearly meeting, the chairman of which is Bernard Waring of Germantown. Another step of importance in this body is the organization by the five-years' meeting of Friends in America of a home mission board with a department of social service, the chairman of which is Ellison R. Purdy, Wilmington, Ohio.

Methodist.—The Methodist Federation for Social Service, organized Dec. 3, 1907 "to deepen within the church the sense of social obligation and opportunity, to study social problems from the Christian point of view, and to promote social service in the spirit of Jesus Christ" was recognized by the General Conference of 1912 as "the executive agency to rally the forces of the church in support of the principles and measures" approved by that body.

The Federation carries on these activities: (1) Publications: *The Bulletin*, pamphlets, leaflets and cards, reading lists, press service, handbooks—in coöperation with other denominations. (2) Information Bureau: gathering material from every possible source in literature and experience and making it available for the needs of the individual pastor and church. (3) Working Plans: testing and completing plans of community service for every department of the church; suggesting and directing to a common end the work of the Annual Conference Social Service Commissions. (4) Social Evangelism: explaining and applying the Social Creed; outlining a programme of community ministry for local churches; interpreting the gospel to the industrial group.

The special war-time programme of this Federation includes education and propaganda in the following; vacant lot gardening, elimination of waste, relief, in coöperation with Red Cross and local charities, the Americanizing of immigrants, the maintenance of industrial standards, the fighting of the venereal peril, the keeping of minimum prices, national prohibition as a war measure, social justice in war finance, spiritual leadership in keeping down hate, defending democracy at home, and creating the international mind. The officers of the Federation are: president, Bishop F. J. McConnell, Denver, Col.; secretary, Professor Harry F. Ward, Boston, Mass.

Unitarian.—The social service work of the Unitarian Church is classified in three divisions, personal service, coöperative service, and the promotion of the larger requirements calling for legislative action to make them effective. Under the second head many of the Unitarian societies are associated with others in the prosecution of various forms of social and civic work. Under the third head the Unitarian commission has given special attention to the programme of the World Alliance for Promoting International Friendship Through the Churches.

SOCIALISM

CARL D. THOMPSON

The International Movement.—Probably the most important event in the international socialist movement during the year is the Russian Revolution which occurred in March. It is doubtless the greatest single event in the history of the socialist movement so far.

As a result of the revolution not only the Czar and his entire *régime* were overthrown, but also the entire social and industrial organization of the country. The revolution was complete and thorough-going; social and industrial as well as political. In the nature of the case, the details of the form of the government and of the new socialist order could not be worked out and applied at once. There has been and will doubtless continue for some time to come more or less confusion and uncertainty due to factional differences and internal troubles as well as to the war pressure, yet the revolution has committed the Russian nation to socialism and to a socialism of the more radical and thorough-going type. It is the first nation in the world to come completely under the control of socialism and the socialists.

One of the first questions the revolution had to meet was, naturally, that of the war. It at once set forth its remarkable and somewhat extended statement of terms of peace which embodied the now famous formula "No annexations; no indemnities." The programme, however, was much more elaborate and detailed than the mere formula would indicate, and followed very closely the general peace programme as adopted by the socialists in all countries including the United States. In fact, the Russian terms of peace were the generally accepted and proclaimed peace programme of the socialist party, and, strangely enough, the programme corresponds very closely in all essential points to the terms of peace proclaimed by President Wilson in his various official utterances.

Briefly, the Russian peace programme includes, (1) no annexations, (2) no indemnities, (3) free and autonomous development of each nation, (4) evacuation of all conquered territory, (5) restoration of devastated countries and conquered colonies, (6) neutralization and freedom of the seas, (7) no economic wars, (8) gradual disarmament, and (9) no secret diplomacy.

This peace programme, of which the above is the merest outline, will be presented officially by the representative of the Russian Government at the Allied War Conference to be held this fall in Paris. Michael Skobeleff, one of Russia's leading socialists, Ex-minister of Labor, and a representative of the Russian Council of Workingmen's and Soldiers' Delegates, has been chosen to represent the Russian Government at this Allied War Conference. Thus, the socialist peace programme will be officially presented by Russia in the Council of the Allied Nations.

The course of events in Russia since the revolution in March has not been without its serious difficulties. At first the revolution seemed determined to go on with the war and a very vigorous offensive was begun on the western front, which met with considerable success in July. Later, however, the spirit of the Russian armies seemed to change completely and from that time on there seems to have been a general retirement of the Russian forces, until by November Russia seemed to be almost, if not completely, out of the war.

During the early fall there were disturbances and attempted counter-revolutions, the more notable being the revolt of General Korniloff and a portion of the army. This, however, was quickly overthrown.

Three more or less clearly defined factions have developed in the socialist movement in Russia: (1) the so-called Popular Socialists, which represent the most conservative and opportunistic group; (2) the Social Revolutionaries, made up chiefly of the peasant classes and having few adherents in the cities and industrial centers—the group from which Kerensky came; (3) the Social Democratic Party, which represents by far the largest group of socialists. This latter group or party is divided again into two factions, (a) the Maximalists or Bolscheviki and (b) the Minimalists or the Menschiviki. It is the Maximalist or Bolscheviki group that has finally come into full control of the government, made Lenine Prime Minister and brought Trotzky and Madam Kolontay into the cabinet.

The relative strength of these various factions was shown in Petrograd in the election in June; at that time the socialists carried the city by an overwhelming vote of 530,000 to 180,000. The vote of the socialist factions in that election was as follows:

Social Democratic Party:	
Menschiviki or Minimalists..	330,000
Social Democratic Party:	
Bolscheviki or Maximalists..	120,000
Social Revolutionaries......	66,000
Popular Socialists..........	14,000

Early in November came the sudden uprising of the Maximalists or more radical faction of the socialist movement which overthrew the Kerensky government and established a more extremely revolutionary government, demanding an immediate cessation of hostilities and a three-months' armistice for the discussion of peace terms. This put the most radical and extreme group of socialists into control of the government.

The Swedish Election.—Next in importance to the Russian revolution during the year, perhaps, are the Swedish elections which occurred in September. The socialists cast 227,000; radical socialists, 60,799; liberals, 202,050; conservatives, 200,203; farmers, 40,706. Thus the socialists cast the largest number of votes and succeeded in electing 86 deputies, the radical socialists 12 more, the liberals, 62, the conservatives, 61 and the farmers nine. The new cabinet announced on Oct. 19 includes four socialists, of whom Hjalmar Branting is Minister of Finance, six liberals, and one non-partisan.

The Stockholm Conference.—Throughout the year persistent efforts have been made to bring together the International Socialist Conference. Early in the year the officials of the American Socialist Party undertook to bring together and revive the International, and issued a call for a World Congress to be held at the Hague on June 3. The invitation was rejected by the Belgian and other parties and was finally given up. Efforts were then centered upon a conference to be held in Stockholm. The American Government refused passports to the American Socialists selected to attend the conference and others of the allied countries did the same, so the conference was postponed. Later on the Russian socialists under the leadership of Kerensky and socialists of some of the neutral countries made another effort to convene the conference at Stockholm. A number of preliminary conferences were held and a date fixed for Sept. 9. Meanwhile, however, difficulties arose again in the matter of securing the consent of some of the governments to grant passports, especially in Great Britain, France, Italy and the United States. Finally, late in October, it was announced that the conference would again be postponed. At that time no definite date had been set for the meeting.

The United States.—A special national convention of the Socialist Party of America was held in St. Louis beginning April 7. The chief purpose of the Convention was the consideration of the war crisis and the attitude the party should take and the lines of activity it should follow. There were about 200 delegates present. (See also I, *Politics and Parties.*)

The resolutions adopted by the convention, and afterward overwhelmingly adopted by referendum vote of the party, were very vigorous and emphatic. They proclaimed "unalterable opposition to the war just declared by the government of the United States"; called upon the "workers of all countries to refuse to support their governments in their wars"; gave the usual socialist analysis of the causes leading up to war; branded the declaration of war as "a crime against the people of the United States and against the nations of the world", declared that "in all modern history there has been no war more unjustifiable than this war", and that "no greater dishonor has ever been forced upon a people than that which the capitalist class is forcing upon this nation against its will". The resolution then urged upon all "continuous, active and public opposition to the war through demonstrations, mass petitions, and all other means within our power"; "unyielding opposition to all proposed legislation for conscription"; recommended "that the convention instruct our elected representatives in Congress, in the state legislatures, and in local bodies to vote against all proposed appropriations or loans for military, naval or other war purposes; and that the convention instruct the National Executive Committee to initiate an organized movement of socialists, organized workers, and other anti-war forces for concerted action along the lines of this programme".

There were two minority reports on the war programme, one by John Spargo, who afterward resigned from the party, and another by Boudin.

Neither received any considerable support either at the convention or in the referendum vote that followed later.

As a result of the anti-war declarations a number of the members of the party, among them many who had been prominent in the movement, resigned, and it is evident from the record of the membership given below that a considerable number of the membership have withdrawn.

The party, however, has kept up its vigorous and concerted action against the war, used its press and its literature widely and was very active in the organization and support of the People's Council for Democracy and Terms of Peace. The Federal Authorities finally began a systematic opposition to the party, indicted many of its speakers, among them the National Secretary, Adolph Germer, censored and suppressed the official organ of the party, the *American Socialist*, and many of the other Socialist papers, raided the national office of the party in Chicago and many of the state and local headquarters, and the state and local authorities in Minnesota, Wisconsin and Illinois broke up and dispersed the meetings of the People's Council.

Meanwhile, a number of those who had left the party, together with representatives of the Progressive and Prohibition Parties and the Single-taxers, brought together a conference in Chicago and launched a new party, the National Party, with a strongly socialistic platform, but declaring allegiance and loyalty to the government in the War.

The number of people who have left the Socialist party seems to have been pretty well made up by new accessions. In the big industrial centers, such as Chicago and New York, thousands of people have joined the party. Those accessions have just about balanced to withdrawals, it seems. At any rate, the membership of the party has averaged just about the same during the first nine months of 1917 as during the years just preceding the war. The average for the first nine months of 1917 was 79,690 which was just a little below the average for the whole of 1916 and a little above that of 1915. The average for 1915 was 79,374, and for 1916 was 83,284.

There have been no general elections that would test the strength of the socialist vote in 1917, but the vote in the cities of New York and Chicago, in the November municipal elections, indicates a very considerable increase in the socialist vote. In New York the vote increased enormously and the socialists elected six members of the state legislature, nine aldermen and several other officers. In Chicago, in a judicial election, the socialists carried six wards by a majority vote, which was far better than they had ever done before. They had previously carried three wards, but only in one case had they done so by a majority vote over all.

Germany.—The conflict between the pro-war majority of the Social Democratic Party and the anti-war minority has finally ended in an open split in the party. The anti-war group in the Reichstag has formed an independent organization called the Social Democratic Union of Labor. It issued a manifesto condemning the official majority of the party for its support of the German government's war policy. Efforts are being made to organize the new socialist anti-war party throughout the nation. The movement is led by Haase, Ledebour and Voghter of the Reichstag anti-war group.

France.—A conference of the French socialists was held at Paris Dec. 29, 1916, at which a number of matters relating to the war were discussed and settled. The vote to continue to support the government in the war was 2,830 to 109, to allow socialists to enter the cabinet 1,637 to 708, to refuse to meet the German socialists in conference until they explained their attitude to the German government and its peace proposals, 1,537 to 1,407.

England.—A conference of the Labor Party was held at Manchester Jan. 23-25. The entrance of Henderson, Hodge and Barnes into the cabinet was approved; a general enthusiasm for peace was shown but at the same time it was determined to continue support of the war.

Finland.—The Social Democratic Party is now the largest party in Finland. It has a majority in the Diet and control of the Senate. The Senate is the supreme governing body and is composed of 12 members. Six of these are socialists and the head of the government, M. Tokoi, is a socialist. The revolutionary government in Russia has granted autonomy to Finland, which for the first time sets this radical nation free to work out its own destiny. The Socialists, therefore, will now have a free hand.

Denmark.—Theodore H. Stauning is the first Social Democrat in this country to become a member of the cabinet. The Danish state, under the leadership of Stauning and Prime Minister Zahle, who is a radical and backed by a socialist majority in the Folkething, has gone far towards putting into practical application the programme of Socialism. It has taken control of all basic industries and is expropriating excess profits and regulating production and distribution.

Norway.—The socialists won notable victories in the municipal election this year. In Christiania, the Socialists won 42 out of the 84 seats in the City Council, thus giving them control of the body.

Porto Rico.—The election in Porto Rico this year showed an increase of the socialist vote from 4,000 to 25,000.

IMMIGRATION

Frank Julian Warne

The contest over the enactment into law of fundamental principles of immigration regulation involving the application of the literacy test before the admission of the immigrant, which was waged throughout the country and in Congress during the past quarter of a century and more, terminated in February, 1917. The climax was the passage of the Burnett-Dillingham immigration bill by the second session of the Sixty-Fourth Congress over the second veto of this measure by President Wilson. The vote in the House of Representatives was 286 in favor of passing the bill over the presidential veto to 106 in favor of sustaining the veto; in the Senate the vote was respectively 62 to 19. This bill had previously been passed by the House (Sixty-Fourth Congress, first session) in March, 1916, by a vote of 308 to 87, but it did not reach a vote in the Senate before the adjournment of that session, instead, it was given a place as unfinished business on the calendar of that branch of Congress to be among the first measures to be taken up on its reconvening. Accordingly on Dec. 14, 1916, the Senate recorded a vote of 64 for, and seven against, its passage. The bill then went to the President who, on Jan. 29, vetoed the bill the second time, exactly one year and one day from the time of recording his first veto. In the Senate vote to override the veto there were 34 Democrats and 28 Republicans, with 11 Democrats and eight Republicans sustaining the veto; in the House 149 Democrats and 131 Republicans voted against the veto, and 55 Democrats and 49 Republicans sustained it, indicating very clearly that the measure was not the policy of any one party but of both parties. This had been the history of the literacy test principle of immigration restriction ever since it first came to a vote in 1896. The measure then passed by both houses was vetoed by President Cleveland, the House passing it over the veto but the Senate refusing to do so by only a few votes. In 1898 the Senate again passed a bill providing for the literacy test, but it was crowded out of consideration in the House by the Spanish-American War. In 1902 the House, and in 1906 the Senate, passed a similar bill. In 1913 the Senate and House both passed a bill containing the literacy test, which was vetoed by President Taft. In the Senate it was passed over the presidential veto but failed of a two-thirds majority in the House by only five votes. In 1914-15 both the Senate and House once more passed an immigration bill containing the literacy test, but this was vetoed by President Wilson. It failed of passage over the veto in the House by only four votes less than the required two-thirds, the Senate taking no action whatsoever on the veto in consequence of this failure of the measure's passage in the House.

President Wilson's message vetoing the immigration bill for the second time is as follows (see also I, *American History*):

> I very much regret to return this bill without my signature.
>
> In most of the provisions of the bill I should be very glad to concur, but I cannot rid myself of the conviction that the literacy test constitutes a radical change in the policy of the nation which is not justified in principle. It is not a test of character, of quality, or of personal fitness, but would operate in most cases merely as a penalty for lack of opportunity in the country from which the alien seeking admission came. The opportunity to gain an education is in many cases one of the chief opportunities sought by the immigrant in coming to the United States, and our experience in the past has not been that the illiterate immigrant is as such an undesirable immigrant. Tests of quality and of purpose cannot be objected to on principle, but tests of opportunity surely may be.
>
> Moreover, even if this test might be equitably insisted on, one of the exceptions proposed to its application involves a provision which might lead to very delicate and hazardous diplomatic situations.
>
> The bill exempts from the operation of the literacy test "all aliens who shall prove to the satisfaction of the proper immigration officer or to the Secretary of Labor that they are seeking admission to the United States to avoid religious persecution in the country of their last permanent residence, whether such persecution be evidenced by overt acts or by laws or Governmental regulations that discriminate against the alien or the race to which he belongs because of his religious faith."
>
> Such a provision, so applied and administered, would oblige the officer concerned in effect to pass judgment upon the laws and practices of a foreign government, and declare that they did or did not constitute religious persecutions. This would, to say the least, be a most invidious function for any administrative officer of this Government to perform, and it is not only possible, but probable, that very serious questions of international justice and comity would arise between this Government and the Government or Governments thus officially condemned, should its exercise be adopted.
>
> I dare say that these consequences were not in the minds of the proponents of this provision, but the provision separately and in itself renders it unwise for me to give my assent to this legislation in its present form.

The literacy test provision of the new immigration bill over which the struggle in Congress and between Congress and the President centered excludes "all aliens over sixteen years of age, physically capable of reading, who cannot read the English language, or some other language or dialect, including Hebrew or Yiddish". Exceptions provide for any alien arriving or already admitted, or any citizen of the United States, to bring in his "father or grandfather over fifty-five years of age, his wife, his mother, his grandmother, or his unmarried or widowed daughter, if otherwise admissible, whether such relatives could read or not". Exemption from the operation of the literacy test also applies to all aliens seeking admission solely for the purpose of escaping religious persecution, those convicted of an offense purely political and not including moral turpitude, those in transit through the United States who later shall go in transit from one part of the country to another through foreign contiguous territory, those who are skilled laborers, otherwise admissible, if there is no like kind unemployed in the country and excluding professional actors, artists, lecturers, singers, ministers of religion, professors, members of any recognized learned profession, and persons employed strictly as personal or domestic servants, etc. Provision is also made for the exclusion of escaped seamen and stowaways, and for all persons ineligible for naturalization unless otherwise provided for by treaties, conventions, or passport arrangements. The new bill strengthens the already existing law excluding criminals, the insane, and those suffering from tuberculosis, and extends the statutory provision against the importation of contract laborers. It increases from four to five dollars the head tax on immigrants entering the country, and makes provision for the better care of immigrants in the steerage of steamships.

The new immigration law became effective May 1, 1917, and was designedly passed primarily to restrict the large volume of immigration that had been pouring into the country prior to the outbreak of the European War. But the war itself has had the effect of restricting the volume to a much greater extent than could ever have been expected from the application of the literacy test. According to the official records of the Federal Immigration Bureau of the Department of Labor, the third year of the War shows the United States to have received the smallest volume of permanent alien arrivals of any year since 1898. Immigration for the fiscal year ending June 30, 1917, was practically the same as during the preceding year, the number of permanent arrivals being respectively 295,403 and 298,826. Including 67,922 temporary or non-immigrant arrivals, virtually the same as in 1916, the total immigration for the past fiscal year was 362,877. Compared with the 1,403,081 arrivals in 1914, the year preceding the outbreak of the European War, this is a decrease of 74 per cent. Emigration from the United States the past fiscal year was 146,379 compared with 240,807 during the preceding year and with 633,805 in 1914. Total immigration was less in volume the past year than for the first fiscal year immediately following the outbreak of the war, the statistics being 362,879 and 434,244 respectively. Total emigration was also less in 1917 than in 1916, the figures being 146,379 and 240,807, as compared with 384,174 in 1915. This has resulted in a gain in net immigration—the difference between total immigration and emigration—of 166,428 in 1917 as compared with 75,871 in 1916 over that of the first year following the war.

VOCATIONAL EDUCATION AND GUIDANCE

Arthur D. Dean

The most important event in vocational education was the passage of the Smith-Hughes bill providing national aid for vocational education. It provides for state boards of control of day-industrial, evening, part-time, continuation, agricultural and home-making schools. It also provides for courses for training of teachers for these various types of schools. It is doubtful if any other educational bill before Congress ever attracted an equal amount of popular attention. In a review of vocational education for the year it is clear that there is an evident tendency to see in it a very complex problem for the solution of which there must be much patient investigation and the cordial coöperation of all possible educational and social agencies. (The Smith-Hughes bill provides funds for investigation.) There is a growing recognition that it will not of itself solve all the problems of life, or of vocations, but that it must take its place as an essential part of a complete programme of education.

There is noticeably less interest in the unit versus dual control controversy, the preponderance of opinion appearing to be against the organization of special independent boards for the control of vocational education. The majority of the states have designated the regular state educational authorities as the boards of control of vocational education.

Only eight states had systems of state-aided vocational education when the Smith-Hughes act was passed Feb. 23, 1917. Forty-two states had accepted the provisions of the act in August, 1917, when the Federal Board organized its executive staff. The new educational machinery needs coördination and adjustment to make it run smoothly, and it needs trained workers to run it. The standards for these vocational teachers and supervisors and the methods through which "practical work of a useful and productive basis" can best be secured are the problems concerning the administrators of the act.

The greatest progress of the year has been in the development of day-continuation schools for young employed workers, although bills introduced for compulsory continuation schools failed of passage in Massachusetts, New Jersey, Illinois and New York.

Increasing importance is attached to the development of proper machinery for insuring a supply of adequately trained teachers, including an effective plan of certification.

In the field of vocational guidance the important progress has been in the further development of modifications of school methods and courses of study providing for educational as well as vocational guidance.

There has been a great extension in the idea of school and industrial surveys looking towards a clear understanding of the needs of industry and its workers. The state of Indiana and the city of New York have made extended contributions in this direction.

The most significant activity of the industrial and trade schools and technical institutes has been in performing war service. Government departments have called in more than a score of vocational educators to outline schemes of training workers in the shipyards, in munition plants and in airplane factories. Vocational schools have furnished directors and instructors to serve as inspectors of materials at arsenals and manufacturing plants. The manufacturers of war commodities have sought the coöperation of part-time schools for developing short unit courses in training unskilled men to become semiskilled workers on automatic processes. Technical schools like Dunwoody Institute, Minneapolis, Pratt Institute, Brooklyn, and Wentworth Institute, Boston, are giving courses to enlisted men in baking, radiography, electrical wiring, ship drafting, telegraphy, steam engine practice, gas-engine operating, carpentry, etc. Industrial schools are organizing courses for women to prepare them to enter those mechanical operations which have been depleted by the enlistment of men and the transfer of male workers to more profitable lines of war work.

A group of vocational educators has been commissioned by the United States Army to study the possibilities of vocational training and vocational readjustment for disabled soldiers and to develop a plan of coöperation between the existing trade schools and the United States Medical Corps for reëducating and rehabilitating the wounded.

Important readjustments of the vocational schools are coming about not only because of immediate war needs but also because of industrial adjustments after the war. The schools on the eastern coast are shifting their students in house carpentry over to ship carpentry, developing new courses in electrical practice, radiography, baking, elementary chemistry, acetylene welding and automobile repairing.

The wartime pressure for output is increasing specialization and production and increasing the tendency towards specialized mechanical processes. This will bring about an increased number of short unit courses and the tendency will be for these schools to break away from the idea of training all-round workmen.

The departments of vocational training in the regular elementary and secondary schools are performing their war service by organizing Junior Red Cross work where hospital supplies are being made on a large scale, imitating as closely as possible in their manufacture the methods of factory production by organizing boys for farm service during the summer vacation through the establishment of farm cadet camps, and by organizing girls into "home units" and teaching them economical ways of cooking, the making over of clothing and organizing community canning clubs.

An interesting and significant development looking towards the organization of the "boy power" of the state is the law passed by the New York State Legislature relative to exempting from compulsory military training all working and school boys of 16, 17 and 18 years of age whose vocational training or vocational experience specifically prepares them for service useful to the state in the maintenance of defense, in the promotion of public safety, in the conservation and development of the state's resources, or in the construction and maintenance of public improvements.

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COÖPERATION

Cheves West Perky

The year 1917 has shown signs of renewed interest in coöperation, and activities of this nature are widespread and varied. Though the year does not record that startling progress expected to result from the high cost of living, some notable steps have been taken and several valuable pieces of work completed. A tendency toward consolidation has marked every step of note. Of national importance was the resolution passed at the Buffalo Convention of the American Federation of Labor on Nov. 12. The resolution reported by Mr. J. W. Sullivan provided for the establishment by the American Federation of Labor of an office in Washington for the study and promotion of coöperation, recommended coöperation to the United States Government in relation to the food problem and to the unions as a protection against the merchants. The Sixth Biennial Convention of the National Woman's Trade Union League at Kansas City, June 3, voted to affiliate with the Coöperative League of America and also recommended local leagues to interest themselves in the Coöperative Movement. The Coöperative League of America called a Conference of the Eastern stores, Nov. 24 and 25, to consider Federation and central buying. Forty-one delegates representing 45 coöperatives were present. Representatives from labor bodies, including Mr. Sullivan from the American Federation of Labor, were there also. Resolutions for establishing a Wholesale and recommending coöperation between labor unions and the coöperative movement were passed.

The most significant event of the year, however, in consumers' or distributive coöperation was the third annual convention of the Central States Coöperative Society, at Staunton, Ill., Sept. 10. This society is a federation of about 50 coöperative stores in the mining and industrial towns of Illinois, and the neighboring states. It has a total annual turnover of more than $3,000,000, and a membership of about 5,000. Agricultural coöperators were invited to attend. The convention recorded a gratifying increase in the number of societies and a great awakening in coöperative interest. It appointed a committee to take immediate action in regard to a wholesale house. It also resolved to hold, at the time of the next convention of the Central States Society, a convention of consumers' coöperatives called by the Coöperative League of America, producers being invited to take part in the discussion. An office was established at Springfield, Ill., with Duncan McDonald as secretary.

The convention was preceded by three months of organizing by the Coöperative League of America in Illinois, Iowa, Indiana, Michigan, Ohio, West Virginia, and Pennsylvania, in an effort to concentrate the coöperative energy of these states. Shortly after the work in this region, the newly formed Tri-State Coöperative Association (Ohio, Pennsylvania, West Virginia) held a conference at Monessen, Pa., Sept. 16, to discuss plans for a Wholesale. There are many young stores springing up in this section. Twenty of these are members of the Tri-State Association. They hope soon to unite their buying with the Central States Association, and they have affiliated with the Coöperative League of America.

A notable feature of the Illinois Convention was the representation of other coöperative groups: the Society of Equity with its Wholesale in Montana was represented by Mr. Bennett; the Chicago Coöperatives, by Carl Sandberg; and the New York and New Jersey stores by James P. Warbasse and Scott H. Perky; from the Southwestern Coöperative Association, a union of Oklahoma stores, came a letter of appreciation; while the Finnish Movement had its spokesman, John Nummivuori, of Hancock, Mich., representing 8,000 coöperators. This group has progressed perhaps more rapidly than any other. The store at Hancock grew so fast that it branched five times during the year. The young stores bought through the parent store; and this proved so satisfactory that a convention of 40 stores was called at Superior, Wis., in July to organize a central exchange. Nineteen stores sent delegates, and arrangements were made for the 40 stores, with a buying power of nearly $2,000,000 annually, to use the exchange.

In Minnesota and Wisconsin the Finns are not alone in having met with great success in coöperative organization. The Right Relationship League, reorganized by Mr. E. M. Tousley as the American Rochdale League at Minneapolis, has just organized 10 new stores in North and South Dakota. These stores, whose sales amount to nearly a million dollars, are audited by the American Rochdale League, and show a strong tendency to centralize their buying. Mr. Tousley makes an estimate of 50 new stores in the section in and around Minnesota and west of Illinois, in addition to 300 older stores together doing an annual business of several million dollars. The American Coöperative Organization Bureau, whose office is in Chicago and whose secretary is Mr. Vedder, estimates the present number of stores in this region as nearer 500. About 200 are members of this Bureau, a number of them in a very thriving condition. All of these stores are not, however, strictly Rochdale, and the Bureau is launching a large coöperative venture of highly centralized buying, and with considerable concessions to stock ownership.

Moreover, the Society of Equity, primarily a farmers' organization, is attempting to coördinate the coöperative work of the consumer with that of the producer in the Northwest. Under its auspices was held the Conference of American Producers and Consumers at St. Paul, July 9-10. About 45 delegates represented farmers' organizations from all over the Northwest and Middle West. The object was to federate the producers and consumers on the plan of the Equity State Union at Great Falls, Mont. The Society of Equity held another large convention at Galesburg, Ill., Oct. 16-18, to discuss collective buying and selling. Rochdale coöperation was endorsed, and the interests of both producers and consumers were considered.

Working for the consolidation of all coöperative forces, the National Agricultural Organization Society has been active in this direction. During the spring the Wisconsin Cheese Federation and the Federation of Jewish Farmers, and in July, 20 Equity stores affiliated with it.

The Non-Partisan League of North Dakota is another farmers' organization which has begun to show interest in the coöperative movement. It has recently established four coöperative stores and expects to have a hundred in the course of a year.

Even across the continent the work of consolidation has progressed. Friendly relations have been established between the Coöperative League of America and the Pacific Coöperative League, also between the Pacific Coöperative League and the Central States Coöperative Society. Moreover, there has been formed, at a convention at Sacramento, Cal., an alliance between organized labor, the Farmers' Union and the Pacific Coöperative League. Mr. Ames of the Pacific Coöperative League has succeeded in establishing the California Coöperative Wholesale on a firm foundation by the aid of the Pacific Coöperative League, which has added this year several new coöperative stores to the remaining 20 stores of California, and many buying clubs, and which has increased its own membership to 1,100.

In Kansas, Kentucky, Tennessee and North Carolina the coöperative store has been promoted by the Farmers' Union; and a member of that organization states that the number of stores in Kansas has been increased to 200 during the year.

The Department of Agriculture, through the Bureau of Markets and Rural Organization, has put out during the year a number of bulletins on Coöperation, the results of extended investigation. Probably the most important are Bulletin 381 on "Accounting and Bookkeeping", Bulletin 394, a "Survey of Typical Coöperative Stores in the United States", and Bulletin 547, on "Coöperative Purchasing and Marketing Organizations in the United States". The last gives us the most up-to-date information on agricultural coöperation. The Intercollegiate Socialist Society has also published a report on Coöperation in the United States. The University of Wisconsin has issued a bulletin on Coöperation in that state (Bull. 282); the University of Minnesota, another on collective buying by farmers' clubs. Two important books on coöperation have just been published: *The Coöperative Movement: Its Philosophy and Destiny*, by Dr. James P. Warbasse; and *Coöperation the Hope of the Consumer*, by Emerson P. Harris.

The Department of Agriculture has recently drafted a bill for agricultural and horticultural coöperatives in conformity with Section 6 of the Clayton amendment. The model limits the term "coöperative" to this form of association. Such a law would seem to exclude the usual Rochdale consumers' coöperative and to obstruct the consumers' coöperative movement.

Of the 28 fairly comprehensive state coöperative statutes, nine have been amended during the year, three are new and one has many new features. The amendments show a tendency to increase the provisions for consolidation among coöperatives. Some of the amendments are insignificant.

UNEMPLOYMENT

JOHN B. ANDREWS

Perhaps the most striking feature about the unemployment situation in 1917 was the absence of accurate knowledge as to the state of employment. It was often stated that there was an excessive scarcity of labor, even such as to demand the conscription of labor for war work. This opinion was reflected in the passage of "lazy man's" laws in Maryland and West Virginia, by which every able-bodied man was required to engage in some useful occupation. (See XV, *Labor Legislation.*) But in December, 1917, the New York State Bureau of Employment claimed that there was no real shortage of workers, but an excessive labor turnover, caused by the restlessness of workmen on account of rumors of unusually high wages in munition plants. Farm wages had risen rather less than those for factory work and to this a considerable part of the shortage of farm help seemed to be due.

Similar information about men workers was given the American Association for Labor Legislation in August by officials of the Federal government's employment service. As to women factory workers, the officials asserted that there was a scarcity of young girls with factory experience, especially at the low wages common until the last few months, but that many inexperienced older women were available. It was difficult also to obtain woman stenographers and clerical workers, particularly to meet the expanding needs of the government departments.

For New York State, employment conditions on war work could be ascertained more exactly through a survey made by the Federal Department of Labor. The survey covered 500 factories filling war orders in 41 different cities and employing 261,117 persons. Of these plants 176 reported a need of 34,155 additional workers, about 13 per cent. of the total labor force in these industries. Of this number 13,323 were requested by a single firm. Although some of them were engaged in filling war orders, the garment trades, carpets, fine leather, fine kid gloves, trunks and suit-cases, high grade wood-work, wagons, mattresses and spring beds, typewriters, art metal-work, tin cans, differentials for pleasure automobiles, and certain kinds of machinery were reported to be laying off workers.

Other statistics on the state of employment in manufacturing industries in 1917 were provided by the New York Industrial Commission and the Federal Bureau of Labor Statistics. The Industrial Commission collects figures of the numbers employed each month in 1,648 establishments employing about a third of the factory workers of the state. Taking the number employed in June, 1914, as 100 per cent., the index number for the first 10 months of 1917 was as follows:

Jan.	121	June	119
Feb.	121	July	118
March	123	Aug.	116
April	121	Sept.	118
May	120	Oct.	120

A similar index number calculated by the Bureau of Labor Statistics from figures from representative establishments in seven stable industries in various parts of the country was as follows for the first eight months of 1917, January being taken as 100 per cent:

Month	Boot and Shoe	Cotton	Cotton Finishing	Woolen	Hosiery and Underwear	Silk	Iron and Steel
January	123	100	117	122	123	109	164
February	123	100	116	122	124	108	165
March	122	100	116	123	125	107	168
April	119	99	113	120	122	106	167
May	118	99	115	120	124	104	172
June	120	99	116	119	123	102	173
July	117	99	111	119	121	102	175
August	110	97	111	116	119	100	180

It will be noted that while the numbers employed are on the whole considerably greater in 1917 than in either 1914 or 1915, both sets of figures show a slight falling off in manufacturing activity during the spring and summer.

Public Employment Bureaus.—The need of improved information on the state of employment as well as the difficulties of securing help for war industries emphasized the need of an adequate national system of public employment bureaus. In its absence various expedients were adopted for the better mobilization of war workers. The United States Employment Service of the Department of Labor opened a number of new offices. It coöperated with the Civil Service

Commission in supplying mechanics for navy yards, arsenals, and other government workshops. The Department of Agriculture arranged to have its field agents report any shortage of men in farming communities to the Employment Service.

The United States Public Service Reserve was also formed by the Department of Labor to supply adult male workers. It registered volunteers who agreed to serve where needed in the national interest either in public or private employment and with or without compensation as their means permitted. The United States Boys' Working Reserve of boys between 16 and 21 was organized by the Department under state directors to meet urgent labor needs. It was expected that the boys would be employed mainly in supervised squads for farm work during the summer, but they were also requested for canneries, light manufacturing, and shipbuilding. Under the auspices of the Department of Labor the Bureau of Legislation and Information of the National League for Women's Service began efforts in the spring to supply female labor to employers engaged in government contracts. In October the work was taken over by the Department of Labor. (See XV, *Labor*.)

One of the most comprehensive plans adopted by state systems of public employment bureaus for extending their service during the war was that started in Ohio in April. The state was divided into 21 employment districts, in only seven of which public offices were already open. Besides office clerks, an outside man to solicit orders for farm help and one or more to solicit orders for industrial workers were attached to each office. The city or county authorities furnished the quarters for every new office, in order to establish closer coöperation between the state and the locality.

In New York City an employment clearing-house was established by the Mayor's Committee on National Defense. This informed the various "non-commercial" agencies operated by philanthropic societies, as well as the public bureaus, of unfilled calls for help.

At the fifth annual meeting of the American Association of Public Employment Offices, held at Milwaukee, Sept. 20-21, uniform records for the work of such offices were adopted. The Association also passed a resolution favoring the draft of a bill for a national system of public employment bureaus, and later requested the American Association for Labor Legislation to secure its introduction in Congress. The bill was introduced Dec. 7. A novel feature provides for the payment by the Federal system of up to one-half the expenses of state offices meeting approved standards.

Prohibition of Commercial Employment Agencies Declared Unconstitutional.—A law of the state of Washington, forbidding the collection of fees by employment agencies, which was intended to stop the operation of commercial agencies, was declared unconstitutional by the United States Supreme Court by a five to four vote. (Adams *vs.* Tanner, 37 Sup. Ct. 662, June 11, 1917.) The majority opinion called the law "arbitrary and oppressive . . . it unduly restricts the liberty of appellants, guaranteed by the Fourteenth Amendment, to engage in a useful business." Two dissenting opinions stated that in view of the demonstrated evils of the commercial agencies the law was a reasonable exercise of the police power of the state.

Public Work.—Pennsylvania was the first state to make systematic arrangements for the extension of public work in time of industrial depression. A board of state officials was established to make plans for such extension, and a fund of $40,000 was set aside for the work. (See XV, *Labor Legislation*.) It should be noted that members of the cabinet have made public letters discouraging the starting of public improvements involving large amounts of construction work during the war. If their recommendations are followed, a number of projects of this kind should be available in the various states at the end of the war. Provided the necessary administrative machinery were set up, such, for instance, as has been established in Pennsylvania, these could be utilized to tide over the dislocation of industry which it is feared will occur at that time.

CHARITY

William T. Cross

The War and Voluntary Charities.—In the literature of charitable agencies there is such an admixture of solicitation of increased support and of confusion over the first effects of the war that an exact summary of present conditions is difficult. Humanitarian interest and sympathy have undoubtedly been increased as an effect of the entry of the United States into the world war. The remarkable financial measures adopted since April have on the whole probably tended to make the larger contributors more willing to increase their subscriptions. This development corresponds with that in Canada, where gifts to charity have increased. This tendency is favored in the United States by the exemption of charitable gifts from Federal income taxation (see *infra*). On the other hand, outside of welfare work relating to soldiers and sailors there has been a distinct tendency to curtail ambitious expansion of voluntary charitable agencies.

An outstanding effect of the war has been to divide appeals and interest between the local community and agencies directly connected with the conflict in Europe. The Illinois Council of Defense, the Pennsylvania Committee of Public Safety and other defense organizations have provided for coöperation with local philanthropies through home charities committees. Local agencies themselves have been led in many instances to combine their efforts and to stem the tide of popular distraction with new types of appeal.

With regard to the effect of the war on the practical service of local associated charities, an outstanding result has been the demonstration everywhere of the primary relationship of poverty and unemployment. Corresponding to the experiences of England and Canada, a radical reduction in poverty due to unemployment seems already to be setting in. For example, during September, 1917, although there was a 12 per cent. increase over September, 1916, of cases aided by the United Charities of Chicago, among the heads of the families involved there were no able-bodied men. Reports of charity organization societies generally in the country seem to indicate that at the outset of the war there was an increase of cases. This may have been due largely to the first industrial displacements and to the rising cost of living. Day nurseries in neighborhoods where war industries are located have shown an increase in number of applications.

At the same time there has been a considerable increase in the cost of relief. The county agent of Chicago has been compelled to reduce the usual pauper ration, the cost of which has increased 37 per cent. over that of the previous year.

One of the most beneficial effects of the war on charitable agencies in general has been the broadening of their basis of appeal to the public. Heretofore they have been concerned, for the most part, with a restricted and unattractive class. But soldiers and sailors represent homes of every degree of economic independence, and of culture, and in these unusual times their families are not beyond the need of social ministration. At the same time appeals for voluntary service in connection with the war have netted a great number of registrants for service in the interests of home charities. Many of these volunteers, impressed with the specialized character of the service demanded, have immediately undertaken technical study in local schools of civics.

Public Institutions and the War.—One of the first groups to offer its services for national purposes was that of superintendents to charitable and correctional institutions. In many states surveys of the facilities of state and municipal agencies have been conducted and specific recommendations made to councils of defense and other authorities for their utilization. In New York, for example, the survey related to the use of property, inmate labor, institutional equipment and personal service. Concretely, the facilities offered included items such as land, laundry and canning facilities, manufacturing features, services of nurses and of inmates. The most common acceptance of the new programme of national effort has been in the direction of cultivation of increased acreage at public institutions, of improvement in dietaries, curtailing waste and increasing coöperation between institutions. The Indiana state prison has leased and cultivated 2,000 acres of land in addition to its own farm, and the state reformatory, 600 acres. In West Virginia a survey of the state was made by experts in the field of charities and corrections, under the auspices of the state council of defense, with somewhat similar results. A special meeting of prison wardens and others belonging to the American Prison Association was held in Washington in July. In this and similar meetings efforts have been made to emphasize features such as have been enumerated, and to call attention to the importance placed on the care of dependent, defective and delinquent classes in any programme of national economy.

Foreign War Relief Societies.—The entry of the United States into the world war has changed considerably the operation of agencies engaged in war charities abroad. Noticeably in the case of the Commission for Relief in Belgium, this has amounted to the withdrawal from active participation in the territory occupied by Germany. German war relief organizations in the United States have ceased activity.

In respect to humanitarian service to the fighting forces in Allied countries, and especially to reconstruction work among the civilian populations, the war has brought about radical developments. With the expansion of the work of the American Red Cross (see *infra*), comprehensive programmes of coöperation in matters of relief and reconstruction have been undertaken in certain Allied countries. Prominent specialists in various professional lines have been sent to take charge of these activities abroad. In the case of France, where the most extensive service has been planned, this includes care for the sick and homeless, and for refugees, organization of a nationwide campaign against tuberculosis, housing and city planning, Y. M. C. A. activities, etc. Appeals on behalf of people of foreign lands have been strengthened through the increase of international interest in America. As an example of this, late in August President Wilson issued an appeal in behalf of the Armenian and Syrian peoples, calling attention to the existence of 400,000 orphans, and altogether of a total of 2,000,000 destitute survivors of the war among these nationalities.

Foreign relief societies have been affected by the natural concentration and simplification of effort, and chiefly by the tendency to carry on this type of service through the single channel of the Red Cross, so far as such arrangements may make for greater efficiency. There was, even at the beginning of the war, a noticeable movement towards correlation of activities of these various bodies. Of this tendency the Emergency Aid of Pennsylvania is a good example. A novel development from the standpoint of the state's interest in this field has been the enactment of a law in Illinois whereby foreign relief societies must have the endorsement of the state council of defense.

The list of foreign relief agencies, large and small, which are operating on a reliable basis in New York City, number over 100. On account of the growing magnitude of Red Cross work, and the shortage of facilities for shipping supplies abroad, the relationship between the Red Cross and similar organizations has become a primary consideration. In June a meeting of representatives of 60 societies was held to discuss the situation, but no conclusive result was reported. Two organizations, the American Society for the Relief of French Orphans, and the French Tuberculosis War Victims' Fund, have had their work absorbed by the Red Cross. Seven important organizations are shipping supplies abroad through coöperation with the Red Cross as follows: American Fund for French Wounded, Franco-American Committee for the Protection of the Children of the Frontier, Emergency Aid of Pennsylvania, League of Catholic Women, National Surgical Dressings Committee, Salvation Army, and Travelers' Aid Society. The War Relief Clearing House for France and her Allies has discontinued shipping altogether. The discussion of this situation relating to correlation of foreign relief agencies is affected by the general understanding that a maximum humanitarian service to Allied countries is the main objective.

American Red Cross.—During the last year the American Red Cross increased its membership more than tenfold, acquired a fund of more than one hundred million dollars for war work, and within a few months after war was declared between the United States and Germany had completed organization on an unprecedented scale in all the war theatres in Europe, besides laying a foundation for extraordinary civilian relief and military aid at home. On May 10, President Wilson, president of the American Red Cross, appointed a war council to direct the work during the war. Henry P. Davison, of J. P. Morgan & Company, was appointed chairman. The other members appointed were: Charles D. Norton of New York; Cornelius N. Bliss, Jr. of New York; Edward N. Hurley of Chicago; and Grayson M.-P. Murphy of New York. Former President Taft and Eliot Wadsworth, chairman and vice-chairman, respectively, of the executive committee, are members of the war council *ex officio.* Mr. Hurley later resigned to become chairman of the Shipping Board, and was succeeded by John D. Ryan of Butte, Mont.

The week of June 18-25 was designated by President Wilson as Red Cross Week, and the mark of one hundred million dollars, which was set in advance, was easily exceeded. On May 1 the Red Cross membership was 486,194, and on Nov. 1, it was more than 5,000,000. In the same period the number of chapters increased from 582 to 2,736.

The national administration of the Red Cross was reorganized, with Harvey D. Gibson of New York as general manager, and with director-generals of military relief, civilian relief, and other executives. The local Red Cross chapters throughout the country have been grouped into 13 divisions, with a fourteenth division embracing all chapters outside the continental area of the United States. Under the direction of the division managers, the local chapters have been instructed in the making of surgical dressings, knitted garments, and the like, materials for which are supplied by the national bureau of supplies at actual cost. Finished products are gathered in division warehouses pending distribution to military centers at home and abroad. What is likely to become an even more important work in the local chapter activities is the "Home Service", organized and extended by the National Civilian Relief Department, which is designed to help needy families of American soldiers and sailors.

The greater bulk of the war fund, available and prospective, will be expended in the war countries of Europe, principally in France. Estimates on Nov. 1 called for appropriations for France totaling $40,000,000 for the ensuing six months. Special commissions were sent to all the belligerent countries to investigate conditions, as a guide for relief organization and appropriations. Major Murphy of the War Council has general supervision of the American Red Cross in Europe, with headquarters in Paris. In France the American Red Cross has undertaken the task of keeping up the French *morale* until the American troops are in the war zone in full force and ready to begin fighting, and to improve health conditions in the regions where United States soldiers will be massed to the utmost degree. The scheme of sustaining the French *morale* embraces specific relief for the needy families of French veterans throughout France. Special attention is also being given to the fight against tuberculosis and other diseases that have increased in virulence as a result of war conditions.

On Nov. 1 49 base hospital units had been organized and more than 12 had been mustered into the United States Army Medical Corps, and were in service in France. The Red Cross supply service, with a chain of warehouses and nearly 500 motor trucks, distributed hospital supplies to about 3,500 French war hospitals. Canteens were opened for the use of both the French and American armies at important railroad stations, where the men going to and from the front are served hot meals at low prices, and where opportunity is had for bathing and disinfection of clothing. Aid has been offered to several villages destroyed by the retreating Germans, to be reconstructed under American Red Cross supervision, so that the former inhabitants may have homes to which to return; and in various agricultural sections devastated by the enemy, assistance has been given to the former tenants, who are being supplied with farming implements and started anew in cultivating the soil. Civilian relief work in France also embraces the care of *repatries* arriving daily by the thousand through Switzerland from behind the German lines, the relief of Belgian children, and the reeducation of crippled soldiers.

The special Red Cross mission to Russia was headed by Dr. Frank Billings of Chicago and William B. Thompson of New York; that to Roumania by Henry W. Anderson of Virginia; that to Italy by George F. Baker, Jr., of New York; and that to Serbia by Cordenio Arnold Severance of Minnesota. The War Council in October appropriated $1,250,000 for the purchase of food, shoes and medical supplies for Roumanian relief. In the same month a gift of $1,000,000 was made to the British Red Cross. During the Italian crisis prompt aid was rendered by the American Red Cross. A relief fund of $1,000,000 was appropriated for Italy and supplies were rushed from France.

Within the United States a camp service assists the army and navy by furnishing supplies which add to the comfort and welfare of men in camp. A bureau of sanitary service coöperates with local authorities in the sections adjacent to camps and cantonments. Members of the war council, division managers and most of the department heads have given their services without expense to the Red Cross.

State Charity Service.—The year 1917 has been signalized by advances in organization of state charities, more radical and extensive than in any other recent year. In Arkansas and Vermont new State Boards of Charities have been created, of the standard supervisory type. The new law in Arkansas shows a correlation with local public welfare work through county boards which is significant. In North Carolina the law governing the state supervisory board has been revised fundamentally and a new commissionership of public welfare created. In Kansas a unique development has taken place whereby the immediate administration of the charitable, educational and penal institutions is concentrated under the authority of a business manager, who in turn is subject to a board of three commissioners serving on salaries of $3,500 per year. This is generally termed an adaptation of the city-manager plan to the government of state institutions. Probably the most far-reaching new departure in this field of state control has been the adoption of a centralized scheme of management for the Illinois charitable and penal institutions as a part of the so-called consolidation measure. Under this comprehensive piece of legislation fifty formerly independent departments or functions have been consolidated into nine departments of the state government, the heads of which make up the governor's cabinet. Within the field of charities and corrections this represents a change from a single board of administration over all the charitable institutions and another such board governing the penal group. The former Advisory State Charities Commission survives as an independent board advisory to the new department of public welfare. The director of the new department serves on a salary of $7,500 a year. Under him there are, aside from an assistant director, six commissioners, each with a distinct field of administration, as follows; fiscal supervisor, superintendent of charities, superintendent of prisons, superintendent of pardons and paroles, alienist, and criminologist. Each of these receives a salary of $5,000 a year. On account of the magnitude of the Illinois charitable and penal service and the extensive investigation which preceded the adoption of the consolidation measure, the new Illinois law represents a landmark in the development of state charities. The only significant counterpart was an arrangement for centralization of the New York state charity service under the proposal for a new constitution, which failed of adoption.

Federations of Voluntary Charities for Financial Purposes.—The nationwide movement for economy, and the natural tendency towards concentration of effort in the work of the so-called home charities, have given fresh impetus to the establishment of centralized financial federations. A development of this sort has been under way for some time, but only this year has it reached the stage of maturity at which a thorough examination and evaluation could be made and the results published.

The distinguishing feature of this type of association is that the member-organizations unite for the purpose of securing their necessary revenues. Non-sectarian organizations of this character exist in the following 14 cities: Denver, Colo.; Elmira, N. Y.; Cleveland, O.; Dayton, O.; Richmond, Ind.; South Bend, Ind.; Cincinnati, O.; Dallas, Tex.; Oshkosh, Wis.; Erie, Pa.; Baltimore, Md.; St. Joseph, Mo.; Grand Rapids, Mich.; Milwaukee, Wis. In the following six cities financial federations once organized have gone out of existence: San Antonio, Tex.; New Orleans, La.; Salt Lake City, Utah; Birmingham, Ala.; Springfield, Mass.; Houston, Tex. The Denver federation was established in 1887. Its title, Charity Organization Society, indicates the correlation of the idea with another well-known type of welfare association. All the remaining federations have come into existence since 1909.

Local commercial organizations have in most instances been active agencies in bringing about these financial federations. In a few cases, however, the social agencies concerned have themselves made the initial move. Cincinnati presents a unique situation in that the financial feature was added after two years' coöperative activity on the part of a council of social agencies, established primarily for improvement of administrative standards. Cleveland presents the most complete development of the financial federation idea, and for that reason much of the argument for and against the scheme turns on the experience of philanthropic movements in that city. These federations rely chiefly on financial campaigns, characteristically of the "whirlwind" sort. However, personal solicitation and educational features are essential in their programmes. Extensive and carefully studied budgets are worked out under the direction of experts. A common feature is to offer to contributors immunity from further solicitation after they have given to the combined budget. One may make a donation, either to the common fund to be applied by its directors, according to their best judgment, or he may designate member institutions and agencies as the recipients of his money. Varying claims of success are made as to increase in number of individuals contributing and in the average amount given by contributors. Along with this a claim is made of a considerable reduction in cost of collections and an increase in popularity of the welfare movement represented in the joint budget.

On the social side claim is made, if we may take the Cleveland federation as an example, of such improvements as the development of a welfare council to conduct surveys on various subjects, of creation of committees on crime prevention, feeblemindedness, etc., of coöperation with state and city departments, with public schools and with other city-wide agencies. At the same time the Cleveland Federation claims to have steadily raised standards in various departments of voluntary charitable work through the leadership of the best agencies in each division. A great advantage in this direction comes from the ability of the more powerful central organization to command the services of experts.

The experience of those communities which have adopted the financial federation idea has been scrutinized thoroughly by a committee of representatives of organized charities, the members of which live in cities not having federations. The results, from which the foregoing account is derived, have been published by the

American Association for Organizing Charity under the title *Financial Federations.* The committee appended to the presentation of their analysis a report advising in the main that cities which are considering adopting the new device should proceed cautiously. They conclude:

> The abolition of competition in the financing of social organizations, for the sake of avoiding its waste, is as attractive a proposition in theory and apparently as logical as the abolition of competition in business, which is championed in part on the same ground. But in the social field, whether we agree or not regarding the economic field, there are spiritual and psychological factors which leave doubts as to the ultimate advantage to be derived.

Donations Exempted from Taxation.—As a part of the War Revenue Act approved by the President on Oct. 3, 1917, charitable donations are exempt from special taxation under the income tax regulations up to 15 per cent. of one's net income. This enactment is known as the Hollis Amendment. Congress has in this way recognized the need of maintaining the standards of educational, charitable, religious and social work in a time when these activities were likely to be curtailed on account of the demands of the war. It reads as follows:

> Contributions or gifts actually made within the year to corporations or associations organized and operated exclusively for religious, charitable, scientific or educational purposes, or to societies for the prevention of cruelty to children or animals, no part of the net income of which inures to the benefit of any private stockholder or individual, to an amount not in excess of 15 per cent. of the taxpayer's taxable net income as computed without the benefit of this paragraph. Such contributions or gifts shall be allowable as deductions only if verified under rules and regulations prescribed by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury.

XV. LABOR AND LABOR LEGISLATION

LABOR

JOHN B. ANDREWS

LABOR AND WAR

Labor's Policy in War Time.—The demands of modern warfare, in which it is variously estimated that from three to 20 industrial workers are required to keep equipped a single soldier on the fighting lines, have brought labor matters and the labor point of view into special prominence in 1917. The leaders of the largest organized body of American wage earners are on record in support of the Government and the war. When war appeared imminent, President Gompers of the American Federation of Labor called a conference of international and national union presidents, heads of Federation departments, the Executive Council, and representatives of the railroad brotherhoods to meet in Washington on March 12. The conference, while hoping for peace, offered their services to the country in the event of war and called upon their fellow workers to follow their example. As conditions essential to securing the "whole-hearted coöperation of wage earners", they named trade-union working standards on war work, "equal pay for equal work" regardless of sex, representation of organized labor on all agencies determining policies for national defense, and limitation of profits wherever, in emergency, any extraordinary efforts were asked of the workers. On April 7, at a meeting of the Council of National Defense and its Advisory Committee, President Gompers in effect pledged the support of his organization to the Government during the war. The American Federation of Labor reaffirmed its belief in the war as one waged for democracy against autocracy in resolutions passed at its annual convention in Buffalo on Nov. 12, following a speech by President Wilson. It favored representation of organized labor at the peace conference, the independence of all nationalities, a peace league of free nations, abandonment of after-war reprisals, and the insertion of certain labor standards in the terms of peace. Attention to the prevention of unemployment during demobilization was also urged.

During the summer of 1917 the American Alliance for Labor and Democracy was formed by trade unionists, social reformers and Socialists who had left their party on account of its opposition to the war to counteract the pacifist propaganda of the People's Council of America among trade unionists (see I, *Politics*). At its first national conference at Minneapolis on Sept. 5-7 the Alliance gave its adherence to the war policies of the Government, declared for protection of the interests of labor, and passed special resolutions in favor of the Russian democracy and the independence of small nationalities.

Certain members of labor organizations. however, opposed the pro-war stand of the officials. At a conference held in New York City on June 30 and July 1, delegates from various labor organizations and "workmen's circles" (benefit societies) formed a Workmen's Council for Maintenance of Labor's Rights, to act with special reference to labor matters in affiliation with the People's Council. Some trade-union officials favoring the war were charged with neglect of the interests of labor. Later the Workmen's Council separated from the People's Council and invited the membership of interested persons regardless of their views on the war. Its programme, issued at that time, dealt mainly with measures intended to preserve good working conditions, but also included items the purpose of which was to reduce the danger of future wars. In the autumn the organization claimed to have formed about a dozen local councils with an affiliated membership of nearly 700,000.

Labor Representation on Official War Boards.—The Army Appropriation Act of Aug. 29, 1916, which organized six members of the Cabinet into the Council of National Defense to aid in industrial preparedness (*A. Y. B.*, 1916, p. 4), provided for an Advisory Committee of seven members to coöperate with the Council. Samuel Gompers was made a member of this Committee to take charge of its work on labor. Acting as chairman he formed a labor committee of about 350 persons, including representatives of labor and capital, government officials and specialists. The committee held its first meeting on April 2 at Washington, and organized eight subcommittees — on wages and hours, mediation and conciliation, welfare work, women in industry, information and statistics, press, publicity, and cost of living and domestic economy It was expected, however, that the greater part of the work of advice to the Council of National Defense would fall upon a previously appointed executive committee of 14 members.

As the result of a protest by the United Mine Workers against failure to include representatives of labor on the coal-production and similar committees of the Council of National Defense, five labor leaders were put on the coal committee in June. Later John P. White, president of the United Mine Workers, resigned his position to become an assistant to the Fuel Administrator. Two trade unionists were members of the Food Administration's committee of 12 which fixed the price for the 1917 wheat crop, and the special commission sent to Russia in the spring of 1917 (see II, *International Relations*), the War Industries Board, which had charge of purchases for the Government, and the Emergency Construction Board, which let contracts for the cantonments for the National Army, all had trade-union members.

Maintenance of Labor Standards.—On the outbreak of war the maintenance of existing labor standards as an essential of national efficiency was urged by a number of civic organizations. On March 23 the American Association for Labor Legislation made public a resolution by its executive committee embodying "essential minimum requirements" for the legal protection of the workers during the war. These included the maintenance of existing standards of safety, sanitation, daily hours, child labor, woman's work, wages, and workmen's compensation; the three-shift system in continuous industries; one day of rest in seven; equal pay for equal work; time and one-half for overtime; revision of wage rates according to changes in the cost of living; compensation for occupational diseases; investigation of health insurance; and the improved enforcement of labor laws. In the interest of this movement the Association began the publication of an occasional bulletin, "Labor Laws in War Time", the first two numbers of which appeared in April and June. Similar statements were issued within a few weeks by the Federal Children's Bureau and the National Child Labor Committee in the interest of working children, and by the National Consumers' League in behalf of working women.

A movement developed, however, to suspend protective legislation during the war period. But this was soon checked by the active efforts of labor organizations and civic associations. The storm center of the movement was in New York State, where a bill giving the Industrial Commission wide powers of modifying the labor laws passed the legislature but was vetoed by the governor. After much agitation the Council of National Defense issued a statement on April 8 recommending that existing industrial standards should not be changed except on the Council's advice, that labor laws should be rigidly enforced, but that state legislatures should give the governors power to suspend or modify the laws at the request of the Council. Only four states, however, enacted laws permitting any form of labor-law modification, namely, Connecticut, Massachusetts, New Hampshire and Vermont (see *Labor Legislation, infra*), and in November action under these measures had been taken only in Massachusetts. The War Emergency Industrial Commission of that state allowed a few firms to work women at night and 60 instead of 54 hours a week, but refused all requests for modifications of the child-labor laws.

On the whole, the Federal Administration opposed any efforts to break down state labor laws. In answer to an inquiry by President Fisher of the Association for Labor Legislation, the Secretary of the Navy said on April 16 that his Department would maintain protective standards in order that national effectiveness might be kept at its highest point. Similar statements were soon made by the Secretary of Commerce and the Secretary of War. President Wilson twice expressed himself in speeches to the same effect, and on June 4 he replied to the governor of Pennsylvania that he thought "it would be most unfortunate for any of the states to relax the laws by which safeguards have been thrown about labor".

Labor Standards on War Work.—Standards of working conditions were formulated by the Government covering a considerable part of its own work and work for it on war contracts. The Naval Appropriation Act of March 4, 1917 authorized the suspension of the eight-hour law on government work in national emergencies, time and one-half to be paid for overtime (see *Labor Legislation, infra*). In March and April executive orders suspended the eight-hour day, first on munitions and destroyers, then on all munitions and shipbuilding work for the Navy Department, on ordnance and other military supplies, fortifications, buildings at the arsenals, and other public works, which in the judgment of the War Department were important for national defense, and, for 30 days, on seed distribution for the Department of Agriculture.

Complaints were made that employees at the Bureau of Engraving and Printing were worked 14 to 16 hours a day in getting out Liberty-loan bonds and other emergency work. The Women's Trade Union League protested in behalf of the women employees, and Representative Jeannette Rankin, after an appeal from some of the women and a special investigation, brought the matter before Secretary of the Treasury McAdoo. In July Secretary McAdoo ordered a return to the eight-hour day and six-day week, which action was protested at a mass meeting of some of the employees.

Threatened disputes between contractors and employees in the building of the cantonments for the National Army and the National Guard encampments caused the Secretary of War and the president of the American Federation of Labor to sign an agreement on June 19 by which an adjustment commission of three persons, representing the Army, labor and the public, was created to control hours, wages and working conditions. The commission was to use as basic standards the union scale in force in each district on June 1. On July 27 the plan was extended to all other construction and repair work for the War Department, including the building of aviation fields, and on Aug. 10 it was further extended to cover similar construction work for the Navy Department, a representative of that Department being added to the commission when such work was under consideration.

An agreement covering the wages of sailors on merchant ships was reached on Aug. 11 by a committee representing the Department of Labor, the Department of Commerce, employers and employees (see also XIX, *The Merchant Marine*). Seamen and firemen were to receive $60 a month under the agreement. Other points of special interest included a 50 per cent. bonus to crews entering the war zone, $100 compensation to sailors for loss of their personal effects if the ship was sunk, access to docks and decks for representatives of the union, and a reduction in the number of experienced seamen required in each ship during the war. The wage scale, with the exception of the bonus, was to hold until a year after the end of the war. Employers and seamen agreed to unite in a campaign to secure new recruits and the return of ex-sailors to the ocean.

A committee of three persons to revise the wage scale in navy yards and arsenals and other government factories was named on Aug. 7 by the Secretaries of War, the Navy and Labor. The committee received recommendations from the workers and officials in each establishment and reached an agreement on Oct. 5 which was said to raise the average wage about 10 per cent. The number of grades of workmen was reduced from five to three. The difference in pay between the highest and lowest grades was not to be more than $1.04 a day, which caused the lower-paid men to receive the largest increases.

Perhaps still more public attention was paid to the appointment of a board of three members to control labor standards on army clothing. The appointment of the board followed complaints that work on uniforms was given out to sub-contractors contrary to the law, resulting in home finishing under unsanitary conditions. It was also charged that contracts had been awarded without regard to the distribution of the trade, so that some manufacturers were unable to secure sufficient help at the same time that there was much unemployment in the chief centers of the industry. It was further said that the bulk of the contracts had gone to unorganized shops having poor working conditions rather than to the unionized factories with their higher standards. The committee secured the insertion in every contract for uniforms of clauses affecting labor conditions which the War Department believed ensured fair wages and proper and sanitary work places. These clauses required compliance with the Federal eight-hour day, with time and one-half for overtime if suspended by executive order; compliance with all state labor laws; the maintenance of collective bargaining between employers and employees; and manufacture only in sanitary premises licensed by the office of the Quartermaster-General department. The board was to fix a minimum wage scale, and any labor disputes arising were to be referred to the Secretary of War.

Suggestions as to the labor standards necessary to secure the highest efficiency in arsenals and all other work places engaged on orders for the War Department were issued by the Chief of Ordnance on Nov. 18. The suggestions included a maximum working day of 10 hours for adult men, eight-hour shifts in continuous industries, one day of rest in seven, proper provisions for health, comfort and safety, adjustment of wages according to changes in the cost of living, and the settlement of disputes by negotiation between the employer and groups of employees. The eight-hour day and the prohibition of night and tenement home work were regarded as essential for women and minors under 18. Women workers should be given seats and should not be allowed to lift weights of more than 25 pounds. When women replaced men the wage standards should not be lowered. For minors the provisions of the Federal child-labor law should be observed.

Other action by the Government with reference to labor conditions included an order by the Secretary of War that the standards of the Federal child-labor law should be complied with at all army forts and posts. A provision also was inserted in the agreement fixing the price of copper at 23½ cents a pound to the effect that wages were not to be reduced, as they ordinarily would be at that price under the sliding-scale system of wage fixing which was in force. On Dec. 1 President Wilson permitted an increase of 35 cents a ton in the price of anthracite coal in order to allow the miners higher wages.

Women Workers in War Time.—The heavy demands put upon industry by the war and the calling into military service of approximately a million men up to November drew attention to the possible utilization of women workers to make up the deficiency. Two official committees on women in industry were formed in connection with the Council of National Defense, the one a subcommittee of the labor committee, the other a subcommittee of the woman's committee. Several similar state committees were organized.

According to special reports received from 26 states and Federal officials by the American Association for Labor Legislation, increased numbers of women were employed during the first half-year of war chiefly in factory work and commercial and clerical occupations of the kinds on which they had long been engaged. A large proportion of the demand for war supplies, for instance, for uniforms and woolen goods, was of this nature. The expansion of government business created a need for several thousand stenographers and typists. Cases of the replacement of men by women, though given much publicity by the newspapers, were probably not really extensive. Women elevator operators, messengers and draftsmen, and a very few street-car conductors, were reported. Women clerks were hired by some banks and railroad offices which had not formerly employed them. Several hundred women were enlisted as "yeomen" in the Navy to do clerical work in navy yards. In manufacturing women were most frequently substituted for men in machine shops of various kinds—in the munition plants of New England and the middle states, in Detroit automobile factories, and in railroad repair shops throughout the country.

For the placement of women on contracts for the United States and its allies, for which in some cases manufacturers reported a shortage of female help, the Department of Labor arranged to coöperate with the Bureau of Registration and Information of the National League for Women's Service. The latter organization was registering available women trained for various occupations. The Bureau agreed to arrange through local subcommittees for the housing and care of women placed at a distance from home, and to work out with the Department of Labor standards of working conditions and the occupations in which women could best replace men. A supplementary agreement provided, among other clauses, that women regularly employed should be given preference in placement, and that home work under sanitary conditions was not objectionable. After six months' work, in October, the staff and activities of the Bureau were taken over by the Department of Labor.

Effect of the War on Child Labor.—The effects of the war on the employment of children were somewhat obscured by the operation of the Federal child-labor law (*A. Y. B.*, 1916, p. 445), which went into effect on Sept. 1, and which reduced the number of working children in states having child-labor laws with lower standards. But in states whose laws were equal to or better than the Federal law, a larger number of children were reported to be leaving school for work at the earliest opportunity. In the spring months compulsory school laws were relaxed in not a few places to allow children to leave school for farm work. Except in New York State (see *Labor Legislation, infra*) this action was without legal warrant.

TRADE DISPUTES

The Strike Record.—Stating that it was unable to secure complete or accurate figures without field investigations, for which its staff was too small, the U. S. Bureau of Labor Statistics ceased to publish its statistics of strikes in 1917. Accordingly no figures of the number of strikes in the country during the year can be given. The general impression is undoubtedly that labor troubles have been abnormally prevalent, especially since the entrance of the United States into the war in April. But it should be kept in mind that the war has caused an unusual amount of attention to be directed to labor problems, and that practically every strike has been mentioned by the newspapers, instead of as formerly merely the larger or more disorderly disputes. During the autumn months the number of disputes rapidly declined, and apparently few were pending Dec. 31, especially in war work.

Transportation. — Strikes in the transportation industry in 1917 mainly affected street-car companies and longshoremen. A protracted strike of employees of the United Railroads, the largest traction company of San Francisco, began without warning on Aug. 12. Within a few days the men presented demands for an eight-hour day, wages of $3.50 a day, and time and one-half for overtime. Previously they had been paid by the hour, and they claimed to have been obliged to work from nine to 14 hours daily.

Strikebreakers from eastern cities were brought in, beginning Aug. 15, and quartered in the car barns. Efforts to operate the cars caused outbreaks of violence, and attacks on the trainmen resulted in several fatalities. Violence was renewed at the end of August, when the city began to operate special steam trains for the employees of certain large ironworks. Six men, including four strikers, were arrested in connection with the death of a conductor on Aug. 23 but were later released. On Aug. 20 the city tried to open negotiations for the purchase of the United Railroads, but the president of the company refused to consider the offer while the strike continued. The city also began proceedings against the company for the alleged unsanitary conditions under which strikebreakers were housed, while the Chamber of Commerce claimed that police protection was inadequate. A movement to call a sympathetic strike of other trades was not carried out. The street-car service was gradually improved after Sept. 1 and became nearly normal by Sept. 10. About this time some 200 of the strikebreakers revolted, refusing to take out cars and saying that they were practically imprisoned in the car barns. They demanded their pay and return fares to the East. Transportation was finally arranged for them and they were sent out of the city under police guard. The strike was "called off" by the union in October.

Another street-car strike marked by outbreaks of violence began in Springfield, Ill., in August. On the return of several hundred men from a Labor Day picnic on Sept. 3, six cars were damaged and the windows of the company's office were broken. On Sept. 9 troops dispersed a demonstration in support of the strike which the police had forbidden, and further rioting occurred. Nearly all the organized workers of the city, including 5,000 coal miners, then went on strike for three days. The sympathetic strike was ended through the efforts of the governor, who withdrew the troops and left the way open for a labor parade.

In July, Tacoma, Wash., street-car employees went on strike, mainly to secure the right to belong to a union, and Seattle car men soon followed. These disputes were settled by Federal mediators. A nine-day street-car strike in Kansas City was ended on Aug. 16 by a compromise agreement. The men were to be allowed to belong to labor organizations and to choose a committee to present grievances to the employers, while the company was to continue to employ both union and non-union men. No efforts were made to run cars during the strike, and there was no disorder. Six hundred strikebreakers were brought in, but left the city after a single day. Unsuccessful strikes in which the main issue was the signing of an agreement with the union took place in Washington, D. C., in March, and in Lincoln, Neb., in April. Street-car operation in Chattanooga, Tenn., was hindered for over a month by a strike in which rioting occurred, which was ended on Oct. 7 by an agreement providing for the "open shop" and the arbitration of grievances. An important street-car strike began in Minneapolis and St. Paul in the first week in December because of an order of the state Public Safety Commission forbidding the men to wear union buttons. A sympathetic strike of all the organized workers in the two cities was called, but work was resumed when the President's mediation commission agreed to investigate the dispute.

One of the principal strikes on the steam railroads started in Chicago on July 28 among the switchmen affiliated with the Brotherhood of Railroad Trainmen. The issue was the adoption of rules regarding employment, promotion and dismissal, which the men claimed were "only reasonable" but which the railroad companies asserted meant a virtual establishment of the "closed shop". The dispute was complicated by the fact that most of the members of a rival union, the Switchmen's Union of America, affiliated with the American Federation of Labor, remained at work. After 48 hours the strike was settled by the appointment of a representative board to settle the questions in dispute.

Strikes of mechanics on the Boston & Maine Railroad early in September, of freight handlers on the Santa Fe late in the same month, and of freight clerks on 14 southeastern railroads late in October were adjusted by mediators of the Federal Department of Labor. The Boston & Maine employees had asked for a wage increase of eight cents an hour and received five cents.

Strikes of dock and harbor workers and longshoremen attracted much public attention because of the danger of interference with the shipment of war supplies. Among important ports at which this class of workers went on strike during the summer and fall were Boston, New York, New Orleans, Galveston and San Francisco. Most of the disputes were settled by members of the Adjustment Board created to settle labor troubles in these occupations (see *Mediation and Conciliation, infra*).

Shipbuilding and Metal Trades.—Even more direct interruption to military preparations was threatened by a number of serious strikes in shipbuilding establishments and navy yards. The first group of these began with strikes of the employees of certain Brooklyn establishments early in April, and one of several thousand ship carpenters in Camden, N. J., in the middle of May. On July 2 machinists and boilermakers in a number of shipyards in New York and Hoboken, N. J., were called out. The men asked for a minimum wage of $4.50 a day and a conference with their employers on wages and working conditions, which the officials refused. On Aug. 22 the men voted to make the strike general throughout the New York district, including the Brooklyn Navy Yard. The strike was settled on Aug. 26 by reference to the newly created Adjustment Board (see *Mediation and Conciliation, infra*).

On Sept. 17 about 25,000 members of the San Francisco Iron Trades Council, employed mainly on government shipbuilding contracts, went on strike for a 50 per cent. increase in wages. Representatives of the U. S. Shipping Board immediately began efforts to settle the dispute. On Sept. 29 the men were induced to return to work under a temporary agreement giving increases of 10 to 20 per cent. to those receiving less than $6 a day. In the latter part of October the Federal Shipbuilding Labor Adjustment Board (see *Mediation and Conciliation, infra*) reached the city and held hearings, announcing a uniform wage scale for the industry on the Pacific Coast on Nov. 4. The award was from 10 to 30 per cent. higher than the old scale, but was in some cases lower than the temporary scale, and in such instances it created much dissatisfaction among the employees. The Board arranged for payment of half the increase by the Government for companies making less than 10 per cent. profit.

Arbitration by the Adjustment Board was accepted also by 6,000 men in Portland, Ore., shipyards at the end of October, after they had been on strike about a month for the union shop and higher wages. A similar strike of 12,000 members of the Metal Trades Council of Seattle, Wash., and vicinity, which had been threatened since July, finally began on Oct. 1, and was put into the hands of the Adjustment Board after the men had been idle three weeks.

A series of strikes on shipbuilding and government construction work in and around Boston broke out in late October and early November. On Nov. 1 employees of the Fore River Shipbuilding Co. at Quincy, Mass., stopped work, alleging that the Company had failed to keep its promise to pay them the navy-yard scale. Government officials persuaded the men to resume work on Nov. 5, leaving matters in dispute to the arbitration of the state Committee on Public Safety. Meanwhile a strike against "open-shop conditions", beginning at a new shipbuilding plant under construction at Squantum, had spread to the Boston Navy Yard, the Watertown Arsenal and other government plants. These strikes were ended and the questions at issue placed in the hands of government officials for settlement on Nov. 16, after the Building Trades Department of the American Federation of Labor had voted at the Buffalo convention to call off all strikes on government construction work. The action of the Building Trades Department also resulted in the ending of a strike at Newark, N. J., for the union shop and wage scale in the building of a shipyard and an army supply depot.

Mining.—Trade disputes in the mining industry centered in the copper mines of Arizona, and at Butte, Mont., and in the soft-coal region of the Middle West. Strikes arose in three different parts of southeastern Arizona, the so-called Globe-Miami districts, the Clifton-Morenci-Metcalf district, and the Warren district in and about the town of Bisbee, and also at Jerome, near the center of the state (see also XVII, *Copper*). The first strike began at Jerome on May 25. The chief demands of the miners were for higher wages and grievance committees. During the strike a labor organizer was forcibly deported. Settlement through concessions to the men was secured early in June by mediators of the U. S. Department of Labor.

On June 15 a convention of Bisbee copper miners formulated demands for a minimum wage of $6 a day for underground and $5.50 for surface work, and for certain other changes in working conditions, including the abolition of compulsory physical examinations. The demands were refused by the operators and the men went on strike on June 26. The mine owners, the Phelps-Dodge Co., claimed that I. W. W. influence was really responsible for the trouble, though the organization in charge of the strike was the International Union of Mine, Mill, and Smelter Workers (formerly known as the Western Federation of Miners), affiliated with the American Federation of Labor. On the other hand it was asserted that in May mine owners who were members of the labor committee of the state Council of National Defense had refused to meet the employee members of the committee to develop machinery for the peaceful settlement of grievances during the war.

On July 12 the sheriff and 2,000 armed men acting as his deputies rounded up 1,186 strikers and strike sympathizers, put them on cattle cars, and sent them to Columbus, N. M. The local authorities refused to permit them to remain there, and they were carried to the desert town of Hermanas. Riots, in which two men were killed, accompanied the deportations. Charging that news dispatches of the occurrence were withheld by the telegraph office for two days through the influence of officials of the Phelps-Dodge Co., the Associated Press attempted to have these officials prosecuted, but the courts ruled that no statutes covered the offense. President Wilson sent a telegram to the governor of Arizona, deploring lawless action by citizens, and Federal troops supplied the deported men with food and water and escorted them back to Columbus, where the Government maintained them until the middle of September. Following the deportations, work at the mines was resumed. The "President's Labor Commission" (see *Mediation and Conciliation, infra*) after holding an inquiry in the district, issued a report late in November in which it said that the miners struck without sufficient cause, but that machinery for the peaceful settlement of grievances was lacking, and that no disorder existed on July 12. The Commission strongly condemned the deportations and recommended prosecution of those responsible. It stated that the unrestricted right of entrance into the Warren district and residence there must be restored. An arbitrator to settle disputes was appointed for the district.

The Commission, after personal conference, also worked out acceptable agreements to end strikes in the Globe-Miami and Clifton districts which had been going on since July 2. The agreements were similar, creating grievance committees of employees for conference with the employers, assuring reëmployment through a central committee for each district to all miners not "guilty of seditious utterances" or having "membership in an organization which does not recognize the obligation of contract", and leaving the final settlement of disputes to a "United States arbitrator" or "administrator" appointed by the Commission. The administrator was to decide the claim of the Clifton district for the same wage scale as the Globe-Miami region.

Over 10,000 copper miners in Butte, Mont., went on strike on June 11. While higher wages were asked for, the principal grievance was apparently the "rustling-card" system. The "rustling card" was a recommendation given a miner when he left his position if his record was considered satisfactory. Nearly all the mines of the district required such a card as a prerequisite to employment. The men claimed that the system operated as a blacklist against employees active in labor organizations. Efforts to settle the strike by a mediator from the Federal Department of Labor proved unsuccessful. It was ended by a wage increase granted by the company on Sept. 17.

The first of numerous local strikes in the bituminous-coal fields broke out in September in eastern Kentucky and Tennessee over the question of "recognition" of the union. Much unrest developed in Illinois, Indiana and Ohio, and demands for higher wages were made. A joint conference of employers and employees, meeting in Washington in consultation with the Fuel Administration, reached an agreement on Oct. 5 providing for an increase if the price of bituminous coal could be raised to cover it and penalizing all strikes and lockouts. But on Oct. 16, 12,000 Illinois miners ceased work because the wage changes had not yet become effective, similar local strikes took place in Indiana, and a strike was called in the southwestern coal fields (Missouri, Kansas, Oklahoma and Arkansas) to force the elimination of the penalty clauses of the agreement. The strikes were in opposition to the wishes of the national officials of the union. The Fuel Administrator issued a warning that the Government might take over the mines if the interruptions to production continued. On Oct. 29 President Wilson authorized an increase of 35 cents a ton in the price of bituminous coal so that the wage increases might be given. The penalty clause of the agreement was finally accepted by the southwestern miners in a convention at Kansas City on Nov. 19, rescinding a previous unfavorable vote.

Lockout in the Shoe Industry in Lynn, Mass.—A lockout in Lynn shoe factories from April 18 to Sept. 20 deprived some 15,000 workers of employment. The lockout began a few days before the expiration of a working agreement between manufacturers and the unions. The manufacturers refused to consider a proposed new agreement which included wage increases of 10 to 20 per cent., and stated that arbitrary rules, unreasonable demands, violations of agreements, and quarrels between the two local unions made it impossible for them to continue operations. The state Board of Arbitration and Conciliation failed in its efforts to settle the dispute. The employees refused the proposal of the employers that the rival local organizations should disband, and their members join the Boot and Shoe Workers' Union. The executive manager of the state Public Safety Committee was finally accepted as arbitrator, and the employees returned to work at their former wages plus a 10 per cent. bonus pending adjustment of rates by the arbitrator and special committees.

Other Important Strikes.—Strikes for an eight- instead of a ten-hour day in the lumber industry of Washington and Oregon were called by the Industrial Workers of the World in July and August. The strikes were not generally successful. It was claimed in the autumn that many workers were practicing sabotage to reduce the output of lumber. The eight-hour day was granted by the Association of Lumber Operators in early December. United States troops were called in to preserve order, and Federal mediators tried to compose the differences in strikes in the oil fields of California, Louisiana and Texas in October and November. Compromise settlements were effected early in December.

Boycotts and Blacklists.—The year 1917 saw the end of the Danbury Hatters Case, which had been in the courts since 1903 (*A. Y. B.*, 1915, p. 430). The unions involved paid $235,000 in damages for the boycott they had instituted against several firms, thus intercepting the sale of the homes of certain of their members to realize the sum.

A case in which labor unions were assessed for damages for the acts of their members causing damage to property during a strike in 1914 involved the Bache-Denman Co., the United Mine Workers and several local unions. It was ruled that an unincorporated union could be sued under the Anti-Trust Act and was not exempted by the Clayton Act. Damages were set by the court at $200,000, making the unions liable for triple that sum, or $600,000, under the provisions of the anti-trust law. The case was immediately appealed to the U. S. Supreme Court. (Dowd *vs.* United Mine Workers, Nov. 22, 1917.)

More favorable to labor was the decision of the U. S. Supreme Court in the so-called Paine case (Paine Lumber Co. *vs.* Neal, 244 U. S. 459, June 11, 1917). Suit was brought against the Carpenters' Union of New York by certain non-union manufacturers of doors, sashes and other woodwork, because members of the union refused to work upon such material. The Court ruled that unless direct malice toward the plaintiffs was shown, which was not the fact in this instance, only government officials and not private persons could bring suit under the Anti-Trust Act. Because of the clauses which have for several years been inserted in appropriation bills to the effect that the money is not to be used in prosecutions of trade unions under the Anti-Trust Act, such suits are not likely to be brought. The same practice of refusing to work on non-union-made wood trim was upheld under the common law by the highest court of New York State (Bossert *vs.* Dhuy, 221 N. Y. 342, Oct. 9, 1917), (Newton Co. *vs.* Erickson, 221 N. Y. 152, Oct. 9, 1917). The court held that the primary purpose of the boycott was to benefit the unions' organized fellow workers in woodworking factories and that it was therefore neither malicious nor illegal. No efforts were made to induce the public not to buy non-union-made trim. The damage inflicted on non-union manufacturers was only incidental to this purpose. (See also VIII, *Law and Jurisprudence.*)

MEDIATION AND CONCILIATION

Work of the Federal Department of Labor.—The mediators of the U. S. Department of Labor were active in 1917 in efforts to settle strikes and threatened disturbances, particularly after the United States entered the war. They intervened in 421 disputes between Dec. 15, 1916, and Oct. 15, 1917, as against 167 in the same period for the preceding year. Out of the whole number, 366 interventions occurred between April 15 and Oct. 15. Between April 6 and Oct. 25, intervention was made in disputes involving 572,029 workers directly and 380,954 indirectly. Successful adjustments were reported in 221 of the total number of cases, and failure to effect an adjustment in twenty-eight. Most of the remaining cases were said to be "pending" on Oct. 15.

Special War Agencies for the Settlement of Disputes.—Because of a number of strikes affecting war preparations (see *Trade Disputes, supra*) and the importance of uninterrupted production, several new boards to adjust labor troubles were formed through the initiative of government officials.

Shipbuilding Labor Adjustment.—The Board formed on Aug. 20 by agreement between the Emergency Fleet Corporation of the Shipping Board, the Navy Department and the labor organizations concerned was typical of these agencies. The Board was to consist of a chairman appointed by the President of the United States, a labor representative named by the president of the American Federation of Labor, and a third member chosen by the Emergency Fleet Corporation of the Shipping Board. When any special plant was involved, two persons representing the company and its employees were to be added to the Board, and when navy work was concerned, there was to be an additional member from the Navy Department. The country was to be divided into districts, in each of which an "examiner", chosen, if possible, by employers and employees, was to be appointed to adjust disputes which could not be settled by the parties concerned. If the examiner failed to bring about an agreement, final decision rested with the Board, whose judgments were to be binding. A threatened strike of sailors on the Great Lakes and the shipyard strikes on the Pacific coast and in and about New York City were among those ended by this board (see *Trade Disputes, supra*).

A similar representative National

Adjustment Commission was created by the U. S. Shipping Board in the latter part of August to deal with labor disputes arising in the loading and unloading of ships. The National Commission was to appoint a local representative commission in each important port and was to act only on appeals from local decisions. All decisions of the National Commission were to be binding, work was to continue without interruption pending a decision, and the union scale of wages, hours, and working conditions was to be accepted as the basic standard in each port. The longshoremen's strike in New York (see *Trade Disputes, supra*) was among the disputes settled by this method.

A representative Harness and Saddlery Adjustment Commission of four members, representing employers, employees and the public, was established by an agreement between the United States, union organizations and employers in the leather-goods industry. Decisions of the Commission were to be binding on all government contractors and their employees, and no strikes and lockouts were to take place during the war period. Nonunionists were to receive the union scale of wages.

Announcement was made on Aug. 10 by the Council of National Defense that it would create a Labor-adjustment Commission of nine members, representing equally employers, employees and the public. The Commission was to deal with all labor disputes on government contracts, its intervention being compulsory if more than 1,000 persons were involved. No further statement regarding the membership or work of the commission had been issued up to the end of the year.

The Fuel Administrator sent out orders on Nov. 5 to the effect that coal miners and operators must not take any "independent action" to "force any settlement in dispute" without submitting the matter to him for decision. Meanwhile, work must continue without interruption. Where "joint relation", *i.e.*, collective bargaining, existed, the regular agencies for dealing with disputes must be used before referring the question to the Fuel Administrator.

Still another agency for the peaceful settlement of labor troubles was created by President Wilson himself on Sept. 18. This was a commission made up of five members, two employers, two labor leaders and the Secretary of Labor, with a secretary. The President stated that he sent the commission to the mountain region and the Pacific Coast as his "personal representatives" to seek to "deal with employers and employees in a conciliatory spirit", to "compose differences" and "allay misunderstandings". Charges of misconduct and injustice had been made to him by both employers and employees, but he was mainly concerned with securing fair working arrangements for the future. Among other activities the commission ended the copper strikes in Arizona (see *Trade Disputes, supra*) and averted a threatened strike of more than 100,000 employees of Chicago packing-houses.

The Railroad Brotherhoods.—The controversy over the eight-hour day for railroad workers (*A. Y. B.*, 1916, pp. 18, 433) broke out again in March, 1917. The Adamson law, establishing the eight-hour day, was supposed to go into effect on Jan. 1, but when it was declared unconstitutional in a test case in a lower court, the railroads entered into an agreement with the Attorney-General to continue on a 10-hour basis, giving the men the back pay due them from January 1 if the Supreme Court upheld the law. The case was argued before the Court on Jan. 8. As several "decision days" passed without a verdict, the men became increasingly insistent in their demand that the eight-hour day should go into effect at once without waiting for the Court. On March 15 the officials of the brotherhoods called a nation-wide strike to begin on March 17. The Secretaries of Labor and Commerce and two members of the Advisory Committee of the Council of National Defense immediately conferred with railroad officials and labor leaders in an effort to avert such action. The labor officials agreed to postpone the strike until March 19, which was a Supreme Court "decision day". In the early morning of the 19th, announcement of the sinking of three American ships by German submarines increased the tenseness of the international situation, and, following an appeal to their patriotism, the railroad managers yielded to the demands of the men. On the same day the U. S. Supreme Court upheld the Adamson law (see *Court Decisions, infra*).

In November the organized railroad trainmen and railway conductors began negotiations with the railroads for a 40 per cent. increase in wages, beginning Jan. 1, 1918. Statements from officials of the engineers' and firemen's brotherhoods indicated that they might take similar action.

The Clothing Industry.—Changes in working conditions in the clothing industry seemed to be reached through peaceful methods in a relatively large proportion of cases. Among such settlements were an agreement between Boston men's-clothing workers and manufacturers, granting a 10 per cent. wage increase and a reduction of hours from 50 to 48 and a like increase in wages given by the arbitration board of the Hart, Schaffner & Marx shops in Chicago. The Board of Protocol Standards, created by employers and employees of the New York dress and waist industry to standardize piece-work prices, was dissolved by mutual consent on March 10, just a year after its formation (*A. Y. B.*, 1916, p. 434).

LABOR ORGANIZATIONS

American Federation of Labor.—A 15 per cent. increase in membership during the year ending Sept. 30, 1917, was reported at the thirty-seventh annual convention of the American Federation of Labor, which opened at Buffalo on Nov. 12. The membership on Sept. 30 was given as 2,371,434, as against 2,072,802 the year before. The bulk of the membership of the Federation was found in 111 national organizations in various crafts and industries, which were in turn made up of 26,761 local unions. In addition, 845 local unions were affiliated directly, and there were 762 city-central bodies and 45 state federations. Out of 98 national organizations reporting, 68 gained in membership during the year. Those unions claiming more than a 10,000 increase were as follows: Boilermakers, 27,732; carpenters, 41,838; electrical workers, 11,000; jewelry workers, 12,067; machinists, 14,183; railway carmen, 13,027; teamsters, 12,338; united garment workers 22,855; united mine workers, 30,034.

Aside from its action on war matters (see *Labor and War, supra*), the following were among the important decisions of the convention. In order, it was alleged, to exert more direct influence on political affairs, the date of the convention was changed from November to June. It was decided to appoint a special colored organizer for work among negroes in the South. A resolution was passed censuring the "autocratic" policy of the Postmaster-General toward the unions of postal employees. Resolutions favoring a Federal eight-hour law for women and children and the extension of the Adamson law to cover all railway employees were adopted without debate. The coöperative-store movement was endorsed and it was voted to appoint an organizer to aid in extending it (see also XIV, Coöperation). The various local unions of office workers, who are largely employed at the various union headquarters, applied for a national charter, but it was refused on the ground that it was not needed.

Among noteworthy trade agreements signed in 1917 by organizations affiliated with the American Federation of Labor may be mentioned those covering all the Ward bread factories and the Victor-American Fuel Co. of Colorado. The latter was a strong opponent of trade unionism during the Colorado strike of 1913-14 (*A. Y. B.*, 1914, p. 416).

The Federal Employees Union of civil-service employees received the endorsement of President Wilson and was given a charter by the American Federation of Labor. The Postmaster-General, however, in his annual report submitted to Congress in December, asserted that the organizations of postal employees were rapidly becoming a menace to public welfare and recommended that Congress repeal the law permitting them to organize.

National Women's Trade Union League.—The sixth biennial convention of the National Women's Trade Union League was held in Kansas City on June 4-10. Much of the proceedings were concerned with the maintenance of proper labor standards for women doing war work and with the protection of women who took men's places during the war. It was urged that labor standards be included in the peace treaty to be signed at the close of the war. (See also *Labor and War, supra.*)

The Industrial Workers of the World.—The Industrial Workers of the World showed considerable activity in 1917, particularly among the timber workers and migratory agricultural workers of the Northwest. A threatened strike of construction workers and harvest hands, called for Aug. 20, to supplement the timber strikes (see *Trade Disputes, supra*), failed to materialize. The Government's action in arresting 27 I. W. W. leaders in Spokane on Aug. 17 was believed to have had a deterrent effect.

Later arrests of officials and members of the Industrial Workers of the World by the Federal authorities included those of 168 persons in all parts of the country on Sept. 28, and 50 persons in the Kansas oil fields on Nov. 20. Charges of "seditious conspiracy" were made. In the September raids the headquarters of the Industrial Workers of the World of Chicago were searched and their papers confiscated. Efforts to resist the selective-draft law by farmers in Texas banded together as the Farmers' and Laborers' Protective Association and by Oklahoma farm tenants who called themselves the Working Class Union were said to be connected with the activities of the Industrial Workers of the World. (See also I, *Administration.*)

On Aug. 1 Frank Little, an I. W. W. official, was taken from a lodginghouse in Butte, Mont., and hanged by masked men. This lawless act increased for a time the tense feeling in the city due to the copper strike (see *Trade Disputes, supra*), but no further disorders occurred. No arrests were made in connection with the lynching. On Nov. 9 17 members of the I. W. W. were taken from policemen by a band of masked men at Tulsa, Okla, flogged, tarred and feathered, and sent out of the city.

Seventy-four I. W. W. members were acquitted of murder at Everett, Wash., on May 5. A boatload of I. W. W.'s from Seattle had attempted to land at Everett on Nov. 5, 1916, to carry on street speaking forbidden by the authorities. In a fight at the wharf between them and deputy sheriffs, two deputies and at least five I. W. W.'s were killed (*A. Y. B.*, 1916, p. 436).

The Mooney Case.—The so-called Mooney case, in which a number of persons prominent in the San Francisco labor movement were accused of complicity in the bomb explosion during the preparedness parade of July 22, 1916 (*A. Y. B.*, 1916, p. 436), attracted general public attention when, following the Russian revolution, a mob in Petrograd demanded of the American Ambassador the release of "Muni". Billings, the first defendant to be tried, began to serve his sentence of life imprisonment in November. Mooney, who received a death sentence in May, was held in jail in December, awaiting a final hearing before the Supreme Court on the appeal of his attorneys for a new trial. Mrs. Mooney and Israel Weinberg were each tried and acquitted on one of the several indictments for murder made against them, but were still held on the other counts at the end of the year. The fifth defendant, Edward Nolan, was out on bail at that time. The discovery of certain letters asking a friend to come to San Francisco to corroborate his story led to the arrest of F. C. Oxman, one of the principal witnesses for the prosecution in Mooney's trial, on the charge of subornation of perjury. Oxman was acquitted of the charge but did not testify at Weinberg's trial. A warrant was sworn out against the anarchist Alexander Berkman in connection with the case, but the governor of New York refused to grant his extradition. President Wilson's mediation commission was understood to have made a thorough inquiry into the Mooney case during its stay in San Francisco.

East St. Louis Race Riots.—Violent race riots at East St. Louis, Ill., on July 2 and 3 caused the death of 24 negroes and five white men. Many other negroes were wounded, their homes were burned, and nearly the whole colored population fled the city. The number of negroes in East St. Louis had greatly increased during the few months previous to the riots, and many of them had been imported to break strikes in certain large industrial plants. For this reason organized labor was in some quarters charged with responsibility for the riots. By others the disorder was considered as due to race prejudice in general and to the corruption and inefficiency of the city government (see also VI, *Municipal Government*). It was even asserted that the militia, brought in to preserve order, joined in the attacks on the negroes. A Congressional investigating committee inquired into the disturbances in the autumn of 1917, but had not issued its report at the end of the year.

In July American-born workmen in the lead mines of Missouri drove out large numbers of foreign miners and their families, and considerable rioting occurred.

COURT DECISIONS

Workmen's Compensation.—Not for several years have as important and far-reaching decisions on protective labor legislation been handed down as in 1917; the courts were notably favorable to this legislation. By three decisions handed down on the same day, the U. S. Supreme Court affirmed the constitutionality of the chief types of state workmen's-compensation laws. The principal constitutional question in a case involving the New York law, which is compulsory for "hazardous" employments, was whether the statute by requiring the employer to make fixed payments for his employees' industrial injuries deprived him of any rights of liberty and property guaranteed him by the Fourteenth Amendment. The Court ruled unanimously that the enactment of laws compensating for industrial accidents tended to promote the public welfare and was therefore within the police power of the state (New York Central Railroad Co. *vs.* White, 37 Sup. Ct. 247, March 6, 1917). The Iowa law, which was elective, was likewise sustained, several references being made to the New York case (Hawkins *vs.* Bleakly, 37 Sup. Ct. 255, March 6, 1917). The Washington law, which was upheld by a divided court, five to four, created a state fund into which employers in specified hazardous occupations were required to pay premiums. The Court said:

> It seems to us that the considerations to which we have adverted in New York Central Railroad Company *vs.* White, *supra*, as showing that the workmen's compensation law of New York is not to be deemed arbitrary and unreasonable from the standpoint of natural justice, are sufficient to support the State of Washington in concluding that the matter of compensation for accidental injuries with resulting loss of life or earning capacity of men employed in hazardous occupations is of sufficient public moment making the entire matter of compensation a public concern, to be administered through State agencies. (Mountain Timber Co. *vs.* Washington, 37 Sup. Ct. 260, March 6, 1917.)

Other decisions of the Supreme Court concerning state compensation laws excluded from their jurisdiction employees in interstate railroad commerce, and in work performed in loading and unloading ships used in interstate maritime commerce (New York Central Railroad Co. *vs.* Winfield, 244, U. S. 147, May 21, 1917; Southern Pacific Co. *vs.* Jensen, 244 U. S. 205, May 21, 1917). Congress later amended the Federal Judicial code so as to confer on longshoremen the protection of state compensation laws (see *Labor Legislation, infra*). (See also VIII, *Law and Jurisprudence;* and XIII, *Property and Casualty Insurance.*)

Hours of Labor.—A law limiting the daily hours of men in manufacturing establishments was sustained by the U. S. Supreme Court. The law in question was an Oregon statute fixing daily hours at 10, with three hours of permitted overtime at higher rates. The Court ruled that the law was a health measure and not a wage law, as had been contended. Since a 10-hour day was already the standard in many industries the legislative requirement could not be considered arbitrary or unreasonable (Bunting *vs.* Oregon, 37 Sup. Ct. 435, April 9, 1917). While the Court some years before had affirmed the constitutionality of limiting the working day of women factory workers to 10 and even to eight hours, the legality of any general restriction of men's working hours had hitherto been uncertain.

The Court also sustained the Adamson law (see *Mediation and Conciliation, supra*) which fixed eight hours as the standard day's work for persons engaged in the movement of trains and provided that their wages should not be reduced because of the change until after an investigating commission created by the act had reported. In view of previous laws regulating hours of employees in interstate train service, the power to fix the eight-hour standard was called "so clearly sustained as to render the subject not disputable". The temporary adjustment of wages was upheld on the ground that Congress had the right to enact legislation necessary to prevent the interruption of interstate commerce because of labor disputes. In the part of the law relating to wages, Congress was in effect asserting its authority "to compulsorily arbitrate the dispute". (Wilson *vs.* New *et al.*, 37 Sup. Ct. 298, March 19, 1917). (See also VIII, *Law and Jurisprudence.*)

Minimum Wage.—On a case involving the constitutionality of the Oregon law which provided for the fixing of minimum wages for women and minors, the U. S. Supreme Court was evenly divided. No opinions were issued. As Mr. Justice Brandeis had assisted in defending the case before becoming a member of the Court, he took no part in the decision. The state Supreme Court of Oregon had sustained the law, so that the equal division of the Federal Court left its verdict undisturbed and the statute in force. (Stettler *vs.* O'Hara, 37 Sup. Ct. 475, April 9, 1917.) Shortly after this decision the state Supreme Court of Arkansas upheld the minimum-wage law of that state as a measure tending to promote public health and welfare (State *vs.* Crowe, 197 S. W. 4, June 23, 1917). Late in December the Minnesota law was also sustained by the Supreme Court of that state. (See also VIII, *Law and Jurisprudence.*)

Federal Child Labor Law.—A test case involving the Federal child-labor law, which forbade interstate commerce in articles made by children under 14, came before the Federal court of the western circuit of North Carolina. The judge granted an injunction against the enforcement of the law in the district, stating that the power of Congress to regulate interstate commerce covered trade among the states but not "the internal conditions of labor" (Dagenhart *vs.* Fidelity Manufacturing Co., Aug. 31, 1917). The case was immediately appealed to the Supreme Court.

Membership in Labor Unions.—As in previous years the Supreme Court was apparently less favorable to the contentions of labor organizations than to protective legislation. In test cases against the United Mine Workers and the American Flint Glass Workers' Union, the Court, on Dec. 10, by the vote of six to three, stated that in plants where workmen are under contracts with their employers not to join unions, injunctions against the activities among them of such organizations to enlarge their membership and call strikes may be sustained. (Hitchman Coal and Coke Co. *vs.* Mitchell, 38 Sup. Ct. 65, Dec. 10, 1917.)

SOCIAL INSURANCE

Seamen's Insurance.—The entrance of the Federal Government into the social insurance field on a large scale through legislation for the insurance of seamen, soldiers and sailors was a noteworthy event of 1917. Since 1914 the Government, through a Bureau of War-Risk Insurance in the Treasury Department, had written insurance on American vessels engaged in foreign trade and their cargoes. An amendment to the act creating the Bureau (see *Labor Legislation, infra*) provided also for the insurance of American seamen against death or disability and for compensation if captured by the enemy. According to powers granted him by the act, on June 19 the Secretary of the Treasury made such insurance, either by the Government or by private companies, compulsory for all officers and crews of American vessels entering the war zone. In other cases it was permissive only. A Division of Seamen's Insurance was organized within the Bureau to handle this business. The only report available on the operation of the division states is that from June 26, when the law went into effect, to July 15, it wrote insurance on 5,446 individuals employed on 90 vessels. The probable losses during the period amounted to $37,980, and were on 22 individuals employed on three different vessels. (See also XIX, *The Merchant Marine.*)

Soldiers' and Sailors' Insurance.—Under the provisions of the soldiers' and sailors' insurance law (see *Labor Legislation, infra;* and XIII, *Life Insurance*) in addition to compensation for disability, and allowances to dependents during service and for death, soldiers, sailors and army nurses might take out from $1,000 to $10,000 of life insurance through a system of monthly payments. By the passage of the act the Bureau of War-Risk Insurance was divided into the Marine and Seamen's Division, for insuring ships and seamen, and the Military and Naval Division for administering soldiers' and sailors' allowances and insurance. Up to Dec. 27 it was announced, applications for approximately $3,000,000,000 of insurance had been received from over 300,000 persons.

Health Insurance.—The first two reports on health insurance by official investigating commissions appeared in January and February, 1917. The principal conclusions reached by the two commissions, which were those of California and Massachusetts, were strikingly similar. Both advocated the early establishment of a compulsory system of health insurance for practically all low-paid wage earners; the provision, through such a system, of adequate medical care and financial aid during illness; support of the system by joint contributions from employers, employees and the state; and the exclusion of profit-making insurance companies from participation in the plan. The Massachusetts and California commissions were continued for further study, and new investigating commissions were created in several important industrial states, including Connecticut, Illinois, New Hampshire, Ohio, Pennsylvania and Wisconsin. The high proportion of rejections necessary for physical disability in the Army and Navy forcibly called public attention to the need of improved methods of protecting health and preventing disease. (See also *Labor Legislation, infra.*)

Workmen's Compensation.—The rise in rates for workmen's-compensation insurance, caused by the increase in the number of accidents, brought insurance problems to the front in 1917. An important report on the subject was that of the Massachusetts Joint Special Recess Committee on Workmen's Compensation Insurance Rates and Accident Prevention. The committee recommended that, except for self-insurance, a single employer's mutual company under state control be made the sole carrier of workmen's compensation insurance. (See also XIII, *Property and Casualty Insurance.*)

An addition was made to the scanty literature on the operation of state compensation laws by a study of the workings of the New York law. This was a part of a report on "Labor Law Administration in New York" by the American Association for Labor Legislation.

The fourth annual meeting of the International Association of Industrial Accident Boards and Commissions opened at Boston on Aug. 24. The chief resolutions passed called for greater uniformity between state compensation laws, emphasis on accident prevention and rehabilitation of injured persons, and an ending of the conflict between Federal and state jurisdiction over accidents occurring in interstate commerce.

SAFETY, HEALTH, AND COMFORT

Safety.—A considerable increase in accidents was noted in 1917, and was ascribed to the increase in industrial activity and to the employment of a larger proportion of inexperienced workers. The need for preventive work was of course accentuated by these conditions. The achievements of the special safety campaign started by the U. S. Employees' Compensation Commission were illustrative of the results which can be secured through active work of this nature. Accidents in the Brooklyn Navy Yard decreased 47 per cent. in the first half of 1917, though the total number of employees rose meanwhile from 5,000 to 12,000. The attention given to detailed methods of accident prevention at the sixth annual safety congress of the National Safety Council, which was held in New York in September, indicated the advanced stage of practical development reached by the movement. Considerable time was devoted to the need for improved medical service in connection with safety work and to problems of respirators and injurious gases. The discussions tended to show that no completely satisfactory type of respirator had yet been found.

Health.—An interesting experiment in securing the active coöperation of labor for improving workshop hygiene was the Labor Sanitation Conference organized by the New York City Health Department. The conference was made up of the leading central labor bodies of the city and 93 local unions, having a total membership of over 750,000. Its chief purposes were to correct violations in the laws for industrial sanitation to work out improved standards, and to aid in the education of the working people in matters of industrial hygiene.

Comfort.—The Lake Carriers' Association, composed of owners and managers of vessels on the Great Lakes, was obliged to abandon its so-called "welfare" plan in the autumn of 1917 in order to avert a strike. The plan included the maintenance of recreation rooms at the principal lake ports, to which sailors were given the privilege of membership for $1 a year, and the issuance of "welfare books" to each member, in which a record of his service on association boats was kept. Preference of employment was given members, and the membership of men having unsatisfactory records was liable to be cancelled. The men claimed that the plan operated as a blacklist and served to weaken union organization.

The U. S. Bureau of Labor Statistics, which has conducted an investigation of employers' welfare work, including 431 large companies in various sections of the country, issued two summaries of parts of its findings, covering "Medical, Hospital, and Surgical Treatment for Employees" in the September *Monthly Review*, and "Rest and Recreation Rooms and Rest Periods" in the October *Monthly Review*. The November *Monthly Review* contained an article on "Employers' Housing in the United States", based on the work of 213 large companies in widely scattered localities.

WAGES, HOURS, AND COST OF LIVING

Hours.—Especially in the latter half of 1917, reductions in working hours were undoubtedly much less numerous than in 1915 and 1916, probably because of the pressure of war requirements and the difficulty of securing employees. Yet during the first half of 1917 the Bureau of Labor Statistics reported that 537,587 persons had their working day shortened to an eight-hour basis. The effect of the Adamson law is traceable in the fact that 400,400 of them were railroad employees.

Wages.—Wage increases, in most cases of 10 per cent., were more frequent than changes in hours. The Bureau of Labor Statistics, reporting on the state of employment in representative establishments in certain staple industries between Dec. 15, 1916, and Oct. 15, 1917, noted wage increases most frequently in iron and steel plants. Many cotton and cotton-finishing mills, silk mills, leather factories, and a considerable proportion of the knitting mills, paper mills, and carbuilding and repairing shops also raised wages during the period. No reductions were mentioned. The percentage increase in *per capita* earnings in the selected establishments between January, 1915, and August, 1917, was given as follows:—

	Per Cent.
Iron and Steel	64
Woolen	45
Boots and shoes	39
Cotton finishing	37
Cotton	35
Hosiery and underwear	35
Silk	28

Over the same period food prices were said to have risen 42 per cent.

Cost of Living.—During the period, therefore, sharp increases in the cost of living occurred, which were at no time more marked than during 1917. The Federal Bureau of Labor Statistics prepared an index number of retail prices of food, covering 27 common articles averaged so as to be typical of a working-class family's food budget. Taking the average prices of these foods for 1916 as 100 per cent., the index numbers for the 10 months ending Oct. 15, 1917, were as follows:

Month ending		*Month ending*	
Jan. 15	112	June 15	138
Feb. 15	117	July 15	128
March 15	117	Aug. 15	131
April 15	127	Sept. 15	134
May 15	133	Oct. 15	138

Up to May, 1917, the Bureau noted abnormal increases in the prices of potatoes, onions and flour. In the summer months the cost of these articles declined, and the greatest rise took place in the price of corn meal, eggs and certain meat products.

The *New York Times Annalist* index number, covering changes in the wholesale price of 25 foods "selected and arranged to represent a theoretical family's food budget", showed a similar marked rise; since average prices between 1890 and 1899 were taken as 100 per cent., it brought out more clearly the change in the cost of food over the last few years. The index numbers for the months of 1917 were as follows:

January	212	July	264
February	222	August	267
March	239	September	273
April	265	October	281
May	285	November	278
June	276	December	281

The price of food at its highest point, in May, 1917, was not far from twice as great as in January, 1916. Even in February, before the principal increases in prices, the New York City Board of Estimate calculated that food for a week for a workingman's family of five which could have been purchased for $7.38 in February, 1915, would cost $9.47.

The high price of milk, the sugar famine, and the scarcity of coal were causing concern in December. On Dec. 10 the larger bakeries of the country were licensed by the Food Administration and compelled, because of an immediate necessity for economy, to make bread by a receipt which it was hoped would reduce the cost of a pound loaf of bread from 10 to seven cents. (See XII, *Economic Conditions.*)

LABOR LEGISLATION

Irene Osgood Andrews

Labor Laws in War Time.—Noteworthy among the labor laws of 1917 are several enacted directly because of the country's entrance into the European War. Most prominent of these is the Federal statute of Oct. 6 (Public, No. 90, 65th Cong., 1st sess.) establishing government accident, health and life insurance for soldiers and sailors (see also I, *The Sixty-fifth Congress*). For death compensation runs from $25 a month for a widow alone to $75, according to the number of dependents. For total disability compensation varies from $30 a month for a single man up to $75, according to number of dependents, or up to $100 for certain extreme disabilities. Provision is made for rehabilitation and vocational reëducation of those permanently disabled. Additional voluntary term insurance is offered for $1,000 to $10,000 at extremely low rates, the Government to carry the expenses of administration and extra war hazard (see also XII, *Life Insurance*). Monthly separation allowances of from $5 to $50 are provided for the wives and children of enlisted men, who are required to allot equal amounts up to half their pay and who may voluntarily extend the arrangement to cover other near relatives. By another act, of June 12 (Public, No. 20, 65th Cong., 1st sess.), insurance is provided for masters, officers and crews of American ships against death, injury, or capture (see also *Labor, supra,* and XIX, *The Merchant Marine*).

Four New England commonwealths, Alaska, and Congress authorized, under certain conditions, the suspension of labor laws during the war. The President may suspend the eight-hour law on public contracts during national emergency, provided time and one-half be paid for overtime (Ch. 180, 64th Cong., 2d sess.). Connecticut (Ch. 326) and New Hampshire (Ch. 194) empowered their governors to modify or suspend the state labor laws, upon request of the Council of National Defense, for definite periods during the war. In Vermont the commissioner of industries, with the approval of the governor, may suspend restrictions on the hours of women and children (No. 172). Massachusetts established a war-emergency Industrial Commission composed of the commissioner of labor (chairman), two employers and two wage-earners to consider applications from individual plants for suspension of labor laws (Ch. 342). A New Hampshire statute shortening the hours of women and children is not to apply to munition plants during war time (Ch. 196), and the Alaska universal eight-hour day, effective Jan. 1, 1918, may be suspended by the governor at the request of the Council of National Defense (Ch. 55). In several additional states attempts to break down labor legislation during the war were successfully opposed. Maryland (Ch. 33) and West Virginia (Ch. 12, 2d spec. sess.) passed "lazy-man's" laws requiring all able-bodied males within certain ages to work during war; in the former state the act does not apply to strikers. New Hampshire prohibited strikes or lockouts in munition plants (Ch. 146). (See also VIII, *Criminal Law.*)

Health Insurance.—Following reports favorable to workmen's health insurance presented early in the year by official commissions (see *Labor, supra*), California (Ch. 312) and Massachusetts (Res. 130) created new commissions to continue the investigations. Additional commissions for the purpose were established in Connecticut, to include old-age pensions, public employment bureaus, hours, minimum wages and other questions (Ch. 163); Illinois (p. 488); New Hampshire, to include workmen's compensation (House Jour., p. 697); Ohio, to include old-age insurance (p. 520); Pennsylvania (No. 414); and Wisconsin (J. R. 24), making, together with the previously created New Jersey commission on old-age pensions, which is now working on health insurance, nine state bodies now studying this question. The California legislature adopted for submission to the people in 1918 an amendment to the constitution authorizing either a voluntary or a compulsory system of health insurance (Res. 57). Investigation of old-age pensions by a separate commission was provided for in Pennsylvania (No. 413).

Workmen's Compensation.—Workmen's-compensation laws were enacted in 1917 in the five states of Delaware, Idaho, New Mexico, South Dakota and Utah, making 40 states and territories which now have compensation acts besides the Federal Government's law for its own half-million civilian employees. Twelve of these laws are compulsory; three base compensation on 55 per cent. of wages, four on 60 per cent., three on 65 per cent., and six on 66⅔ per cent. or more.

The new Delaware act (Ch. 233) is elective. Insurance of the compensation risk in a stock or mutual company is required unless the employer proves ability to pay directly. Failure to use a reasonable safety device provided, or to obey a safety statute, debars from compensation. For total disability compensation for 270 weeks is 50 per cent. of wages, thereafter, 20 per cent.; waiting period is 14 days, with $25 medical allowance. Administration is by an Industrial Accident Board of three members appointed by the governor at $2,500 per year. In Idaho the law (Ch. 81) is compulsory. For total disability compensation is 55 per cent. of wages for 400 weeks, thereafter, $6 a week; waiting period is seven days, and medical care must be furnished for a reasonable time. Insurance must be in the state fund unless employer deposits satisfactory security. An Industrial Accident Board of three members appointed by the governor at $3,000 a year is to administer the act. The New Mexico act (Ch. 83) is elective. Compensation for total disability is 50 per cent. of earnings for 520 weeks; waiting period is 21 days, during which medical care must be provided up to $50. Compensation is increased 50 per cent. for employer's failure and decreased 50 per cent. for employee's failure to obey a safety statute. Employer must insure or prove solvency. No provision is made for administration except through district courts. The South Dakota law (Ch. 376) is elective. Total disability compensation is 50 per cent. of earnings up to $3,000 or four times average annual earnings. Waiting period is 14 days unless disability extends beyond eight weeks, in which case compensation is paid from date of injury. Medical care must be provided up to $100 for four weeks. Employers must insure in mutual, stock or reciprocal company, or prove ability to pay compensation. The act is administered by an industrial commissioner. The act in Utah (Ch. 100) is compulsory. For total disability compensation for five years is 55 per cent. of wages, thereafter, 40 per cent.; waiting period is 10 days, and medical care must be provided up to $200. Employers may insure with the state fund, stock or mutual company, or carry self-insurance. An Industrial Commission of three members is appointed by the governor at $4,000 a year to administer the law.

Congress (Public, No. 82, 65th Cong., 1st sess.) extended to longshoremen the rights under state workmen's compensation laws for which they had been declared ineligible by the U. S. Supreme Court in the Jensen case (see VIII, *Law and Jurisprudence;* and XII, *Property and Casualty Insurance*). Twenty-six states adopted amendments to existing acts, the tendency being to extend scope, shorten waiting period, and increase provision for medical care. Michigan (Ch. 249) and Oregon (S. J. R. 19) authorized investigations of workmen's-compensation problems. (See also XIII, *Property and Casualty Insurance.*)

Minimum Wage.—The Connecticut commission to study, among other things, the minimum wage has already been mentioned. Arizona (Ch. 38) established a flat minimum wage of $10 a week for women in stores, offices, shops, restaurants, dining rooms, rooming houses, laundries or manufacturing establishments; violation is a misdemeanor. Colorado transferred to its Industrial Commission the powers of minimum-wage determination previously held by the state Wage Board (Ch. 98), and Washington extended the authority of the Industrial Welfare Commission to telegraphs in rural communities and cities of less than 3,000 (Ch. 29). A few states raised minimum wage rates for certain public employees, and the United States granted employees in the legislative, executive, and judicial departments an increase in pay for the fiscal year 1918 of 10 per cent. to those receiving less than $1,200 and five per cent. to those receiving between $1,200 and $1,800 (Public, No. 381, 64th Cong., 2d sess.).

Hours.—Acts regulating the hours of labor of women and children or strengthening or extending existing laws upon that subject were passed in about 15 states. Montana (Chs. 18 and 70) and Nevada (Ch. 14) adopted the eight-hour standard for women, making six western states and the District of Columbia which are now on that basis. California extended the women's eight-hour law to lodging and apartment houses, hospitals and places of amusement, but excluded graduate nurses and women in fish, fruit and vegetable packing when work is necessary to prevent spoiling of the product (Ch. 582). Connecticut prohibited night work and employment for more than 48 hours a week for women and children in restaurants, cafés, barber shops and photograph galleries (Ch. 300), and forbade employment under 18 years of age in night messenger service in the larger cities (Ch. 261). The Delaware women's hour law is extended to restaurants, hotels, places of amusement and dressmaking establishments, and work at night or for more than six days a week is made illegal (Ch. 230). The age for employment beyond 10 hours a day is raised in Minnesota from 14 to 16 (Ch. 248). New York brings restaurants under the law limiting women's work to nine hours a day and to 54 hours and six days a week and prohibiting night work (Ch. 535). Ohio reduces women's hours from 10 to nine a day and from 54 to 50 a week, and bans night work (p. 149). Overtime for women in addition to 10 hours a day is permitted in Oregon in fruit, vegetable and fish packing, but must be paid for at one and one-half regular time or piece rates (Ch. 163). The Pennsylvania Industrial Board is empowered to modify but not to extend, the legal hours of women except in manufacturing (No. 254). An eight-hour day and six-day week are required for children, and night work is prohibited for them in Tennessee (Ch. 77) and Vermont (No. 177), while in Utah their hours are reduced to eight a day and from 54 to 48 a week (Ch. 80). The only state to weaken its regulations is Wyoming, where the repeal of several provisions and the amendment of most of the others leaves women's hours probably longer than before (Ch. 106). Alaska established a universal eight-hour day for all workers, including partners and officers of corporations (Ch. 55), and also specifically provided an eight-hour limit in underground mines (Ch. 4). Work in lead or zinc mines is similarly restricted in Kansas (Ch. 242). California (Ch. 52) and Montana (Ch. 30) extend the eight-hour day to new classes of public work, and Congress, in the act providing a civil government for Porto Rico (see vii, *Porto Rico*), declares an eight-hour day for all laborers and mechanics engaged in public work on the island (Public, No. 368, 64th Cong., 2d sess.). Certain states also make minor changes in the provisions for rest periods for public or private employees.

Child Labor.—Regulation of children's hours is dealt with in the preceding paragraph. Other legislation shows a steady tendency to increase the number of prohibited employments and to raise the minimum age at which children may work. Arkansas (Act 391) and Vermont (No. 177) authorize certain officials to make rules governing employment certificates, which must conform with any rules made under the Federal child-labor law of 1916 (*A. Y. B.*, 1916, p. 445). Delaware establishes minimum ages of 12 for employment in canneries handling perishable fruits or vegetables, 14 for other canneries, and 18 for specified electric work and powder factories (Ch. 232). Children under 14 may not work in mills or canneries in Kansas (Ch. 227). Michigan permits children 14 or over to work out of school hours in factories, stores, offices, messenger service and the like, provides for attendance at continuation schools (No. 280), and creates a commission of three to study conditions of child labor (No. 293). In Porto Rico employment of children under 14 is prohibited in any occupation injurious to health or morals or hazardous to life or limb (Public, No. 368, 64th Cong., 2d sess.). Tennessee takes the same action with regard to canneries (Ch. 77), and Texas amends its law to set minimum ages of 15 for employment in general factory work, places of amusement or messenger service in large cities, and 17 for breweries and places where explosives are used (Ch. 59). A few states also strengthen the regulations for issuance of working papers. California (Ch. 580), Delaware (Ch. 232) and Texas (Ch. 59) exempt farm work from prohibitions against child labor.

Factories and Workshops.—The movement toward establishing a simple standard of safety in the statutes and granting broad power to an administrative officer to make regulations for its application is frequently exemplified in the year's legislation. In Utah "safe" is defined and the Industrial Commission is authorized to fix such reasonable standards of construction and maintenance of places of employment as will make them safe (Ch. 100). Idaho gives its Industrial Commission the same power, and in addition authorizes it to prescribe necessary safety devices (Ch. 81). New Hampshire requires the employer to do everything reasonably necessary to lessen the danger to safety and health in his plant, and authorizes the commissioner of labor to make necessary rules for applying this standard (Ch. 183). Wyoming requires the commissioner of labor to establish necessary machine safeguards and fire escapes (Ch. 113). Detailed health and safety provisions, however, are not entirely unrepresented. Montana provides in detail for protection of employees in connection with electrical apparatus (Ch. 171), and Rhode Island amends the factory-inspection laws to make certain requirements more definite instead of leaving them to the discretion of inspectors (Ch. 1522) Delaware regulates factories using lead or other poisonous substances where women are employed (Ch. 231). Besides a number of minor measures, the construction and maintenance of steam boilers was regulated in Arkansas (Act 428), California (Ch. 202), Michigan (No. 174), and New Jersey (Chs. 185 and 251). New Jersey also strengthens its restriction of tenement home work (Chs. 176 and 229). The act providing a civil government for Portò Rico (see *supra*) provides that nothing in the act is to be construed to limit the power of the legislature to enact laws for protecting the lives, health, or safety of employees.

Mines and Tunnels.—In West Virginia the chief of the department of mines is authorized to make necessary safety and sanitary rules for sand and clay mines and quarries (Ch. 20), and the operation of a mine rescue car is authorized (Ch. 47). Detailed mining codes superseding previous acts were adopted in Alaska (Ch. 51) and Washington (Ch. 36), and a commission to revise the coal-mining laws was authorized in Kansas (Ch. 238). Kansas also provided for mine rescue stations (Ch. 239). A few other states made minor amendments to their mining codes, and Pennsylvania adopted an elaborate statute for the protection of workers in compressed air (No. 364).

Railroads and Street Cars.—Seats for motormen are required in Ohio (p. 590), and the restriction against their use in the center of cities is removed in Connecticut (Ch. 106). Arkansas requires glass or other screens to protect motormen in winter (Act 174), and provision for heating vestibules is increased in Kansas (Ch. 255). Ohio requires automatic or foot-power doors on locomotive fire boxes (p. 560).

Building Construction.—Delaware (Ch. 234) and New Jersey (Ch. 168) regulate scaffolding used in the erection or painting of buildings.

Unemployment.—Investigations into the subject of unemployment are instituted in North Carolina (Ch. 170) and Oregon (H. C. R. 15), and into public employment offices in Connecticut (Ch. 163). Establishment of public employment agencies is provided for in Arizona (Ch. 21), Arkansas (Act 11), Georgia (No. 209), New Hampshire (Ch. 198), North Carolina (Ch. 170), South Dakota (Ch. 376) and Utah (Ch. 100), and existing systems are expanded in certain other states and with a $250,000 appropriation by the Federal Department of Labor (see XIV, *Unemployment*). Four states authorize the coöperation of state and Federal employment authorities. Half a dozen states—Arkansas (Act 11), Georgia (No. 209), Nebraska (Ch. 199), Oklahoma (Ch. 181), Tennessee (Ch. 78) and Utah (Ch. 100)—take up the regulation of private commercial agencies. Pennsylvania prepares for possible industrial depressions by creating a fund for public works during dull periods, the initial appropriation being $40,000 (No. 411). Oregon memorializes the President against the age limit in government and public-service employment (H. J. Mem. 2).

Trade Disputes.—An interesting tendency is disclosed in a few northwestern states to free strikes from injunctions and at the same time severely to punish violence. Acts in Minnesota (Ch. 493) and Utah (Ch. 68) legalize labor unions and limit the issuance of injunctions in labor disputes. Minnesota (Ch. 215) and Idaho (Ch. 145) define criminal syndicalism and punish its advocacy or teaching, while Idaho makes a specific application of the doctrine, driving metallic substances into lumber, a crime (Ch. 136). New Hampshire, in addition to the special war-time prohibition of strikes or lockouts in munitions plants (Ch. 146), strengthens the law regulating advertisements for workers during labor troubles (Ch. 99), and provides that mediation or arbitration proceedings shall not be evidence before any other tribunal (Ch. 142). California provides that the Home Defense Guard shall not be used in strikes (Ch. 689), and the new Industrial Commission in Utah is directed to promote voluntary arbitration (Ch. 100).

Immigration.—The new Federal Immigration Act (see XIV, *Immigration*) retains the restriction against importation of contract laborers, but skilled labor may be brought in if labor of a like kind cannot be found unemployed in the country (Public, No. 301, 64th Cong., 2d sess.). In Massachusetts preference in employment as teamsters on public work is to be given first to citizens of the state and then to those of the country (Ch. 260).

Wage Payment and Liens.—A large number of states passed laws regulating or safeguarding wage payments. Among the more important of these are provisions forbidding or restricting the payment of wages in scrip in Illinois (p. 363), Kansas (Ch. 229), Minnesota (Ch. 348), New Mexico (Ch. 16) and Tennessee (Ch. 28). Semi-monthly pay days were established on railroads in Nebraska (Ch. 218), North Dakota (p. 206) and West Virginia (Ch. 50); for railway, mining, and manufacturing corporations, in New Mexico (Ch. 16); for all private employment, in Tennessee (Ch. 28); and for certain public employees, in California (Ch. 574) and Wisconsin (Chs. 448 and 469). Family interest in wages is recognized in Maine (Ch. 298) and Utah (Ch. 41) by requiring the written consent of the wife to the assignment of wages for small loans, and in Arizona (Ch. 22) and Florida (Ch. 7366) the surviving spouse may collect wages due to decedent. Mechanics'-lien laws are extended or otherwise amended in nine states, and wages on public work are protected by bond in three states.

Prison Labor.—California requires the labelling of certain prison-made goods (Ch. 164). New Jersey provides that prison labor may not be used in strikes or lockouts, or in public work if sufficient free laborers can be secured (Ch. 157), while North Carolina (Ch. 286) and Tennessee (Ch. 46) abolish the system of contracting prison workers to private employers. (See also XIV, *Criminology and Penology.*)

Miscellaneous.—Illinois created a commission to study conditions of women in industry (p. 519), and a similar commission in North Dakota is to study labor conditions of women and children (Ch. 181). The Federal Department of Labor was directed to investigate the cost of living of wage earners in the District of Columbia (Pub. Res. 39, 64th Cong., 2d sess.). Colorado makes cheating a person of his labor swindling (Ch. 54), and Tennessee prohibits misrepresentation of wages (Ch. 48). On the other hand, the duty of a workman to return labor for wages paid is enforced as to lumbering by New Hampshire (Ch. 3). California (Ch. 172) and Ohio (p. 614) prohibit "job selling", and Michigan (No. 92) and Ohio (p. 603) require hearings for railroad employees before discharge or disciplining. California forbids forcing employees to purchase goods from an employer or other specified person (Ch. 141), requires employers to pay the cost of necessary bonds or photographs (Ch. 108), and orders public-utility corporations to furnish service letters on discharge (Ch. 747). The usual restriction against use of the stopwatch, motion studies or the bonus on work for the Federal Government is contained in the Fortifications Act and the Naval Appropriation Act (Chs. 54 and 180, 64th Cong., 2d sess.) and in the Army Appropriation Act and the Sundry Civil Appropriation Act (Public, Nos. 11 and 21, 65th Cong., 1st sess.).

XVI. AGRICULTURE, HORTICULTURE, FORESTRY AND FISHERIES

AGRICULTURE

E. W. Allen

Agriculture and the War.—The entrance of the United States into the European War accentuated the already heavy demands laid upon American agriculture. The food situation of the Allies was becoming more serious and the getting of supplies to them increasingly important. Diminished crops of Argentina and of Australia placed dependence more definitely on the United States. It had become more evident that food was to be a big factor in deciding the outcome, that the war was a real struggle for existence. This conviction was voiced by President Wilson in an earnest appeal to the farmers, in which he declared that upon them "in large measure rests the fate of the war and the fate of nations."

Even before the declaration of war the necessity for economy and conservation of food supplies had been impressed upon the American people by the serious shortage of certain products and the high prices of others. The abnormally small supply of wheat and potatoes, prophecies of meat shortage, and much public agitation of the whole question of the future food supply had led to considerable alarm.

The United States entered the war in April without a reserve of food supplies, with a food shortage in prospect, and at a time when the world's food reserve was very low. The reserve stocks of wheat in the United States were said to be lower than at any previous time at that season, the visible supply being placed at 30,000,000 bu., with a somewhat larger invisible stock. The concern was not alone for the food supply of this country but for the Allies in Europe, the protection of whom was at first looked upon as probably the most important and effective aid the United States could render in the near future. The unusual drain upon American products is shown by the fact that before the outbreak of the war the United States had been exporting slightly less than 100,000,000 bu. of wheat a year to Europe; in 1915, the amount jumped to 332,000,000 bu., and in 1916 it was 234,000,000 bu. In the fiscal year ending June 30, 1917, when our own crop was abnormal, it amounted to 203,578,609 bu. (including flour), the imports for that year being about 25,000,000 bu.

Widespread agitation and preparations for larger production of food materials had begun in some of the states before war was declared, especially under the guidance of the agricultural colleges, and the U. S. Department of Agriculture had taken energetic measures in that direction. On our entrance into the war, more systematic and directed effort became a necessity. The need became apparent of a mobilization of agricultural resources to organize the movement better, determine the supplies available, locate and help to provide the necessary seed, fertilizers, labor, etc., needed by farmers, and stimulate the raising and the conservation of food by all classes of people.

Agricultural Mobilization.—In this effort the Department of Agriculture was accorded the leadership and assured the support of the various state agencies. In April it called a conference at St. Louis, which was participated in by representatives of the Department, the agricultural colleges, and the state departments of agriculture, at which 32 of the states were represented. This conference urged a survey of the food, labor, and other resources of the country, to be conducted by the Department, the fixing of prices of certain products in order to stabilize them and to furnish assurance to farmers, and the provision of a central agricultural body in each state to mobilize its agricultural resources and coöperate with the Federal Department in carrying forward the general programme. Concrete suggestions were made of plans for increasing production of the large staples, for preventing waste, and for the better distribution of food products. Many features of the programme were put into operation by the states at once, and an agricultural mobilization of huge proportions followed, in connection with which the assistance of Congress was asked.

Emergency Appropriation.—In response to a Senate resolution the Secretary of Agriculture submitted in April proposals for increasing production, improving distribution, and promoting conservation of food supplies, outlining the organization for carrying out these purposes, and estimating $25,000,000 as the approximate amount required. Ultimately the proposal as outlined was modified and the measure divided into two separate bills, one relating to food production and the other to food control. After much discussion and delay, resulting in the loss of months of valuable time in the midst of the growing season, these acts were finally passed and signed on Aug. 10.

The Food Production Act carried an aggregate appropriation of $11,346,400. The principal items authorized were for educational and demonstration work through the agricultural-extension system, food surveys, marketing and distribution studies, the procuring and sale of seeds, aiding in the supply of farm labor, stimulating live-stock production, combating insect pests and plant and animal diseases, and promoting the conservation and utilization of plant and animal products. The largest single item was $4,348,400 for extension teaching and demonstration through county agents, home-demonstration agents, and boys' and girls' clubs.

The Secretary of Agriculture was given very broad authority to investigate the conditions relating to food and agricultural supplies, with a view to making a quick survey to ascertain as accurately as possible the status of the country's food and feed supply from the farm to the consumer. There was provision for further extending the market-news service of the Department to include grain, hay, seeds, and dairy and poultry products and to supply additional information on the movement and distribution of perishable products.

An item of $885,000 was carried for increasing the meat supply, especially the production of hogs and poultry, since these are the two livestock products capable of most rapid increase. Efforts were authorized likewise for extending the campaign against animal diseases and pests, especially hog cholera, the cattle tick, and tuberculosis. For combating insect pests and plant diseases $441,000 was carried in the Act, to include insect infestations of stored products. In order to overcome the possible shortage of seed in localized areas, the Act conferred authority on the Department to purchase seeds or contract with persons to grow them and to sell the seeds to farmers for cash at cost price plus the expense of packing and transportation, providing for this purpose an appropriation of $2,500,000, which may be used as a revolving fund.

The Act amended the Meat Inspection Act in such a manner as to allow the admission for immediate slaughter of tick-infested cattle otherwise free from disease, the purpose being to increase the meat supply through importations of live cattle from Mexico and South and Central America. The Act also opened to settlement some 600,000 acres of land in Idaho, rendering less rigorous certain requirements for residence thereon, and authorized the Secretary of the Interior to suspend certain residence requirements of the Reclamation Act with reference to the supplying of irrigation water (see also IX, *Public Lands*, and *Reclamation*).

Production Campaign.—The campaign to increase production was without precedent in its magnitude and comprehensiveness, its resourcefulness, and its spirit of intelligent leadership and service. The resources of the U. S. Department of Agriculture, the agricultural colleges and experiment stations, and many other agencies were concentrated upon the emergency situation with a view to rendering all possible assistance and support. Nation-wide measures were taken to stimulate production on farms and through more extensive gardening. "Individual farming" was forcefully urged and organizations to promote and aid it sprang into activity. When the state committees of safety or councils of defense organized, their agricultural or food committees became active agencies for the movement, their assistance, aside from general stimulation, taking the form of locating unemployed tracts of land to be rented or donated, providing tractors for plowing, locating supplies of seed, fertilizers, labor, etc., providing credit, aiding in distribution and marketing, and giving personal assistance by way of directions. The New York State Food Commission, for example, had 40 tractors at work in some 20 counties, usually in charge of the farm bureaus (county agents), to help groups of farmers, representing at least 150 acres in each case, to prepare their land.

Communities were urged to raise their own food as far as possible, not only to swell the general supply but to relieve the strain on transportation. A very active campaign was waged for home gardens, later known as "war gardens," in towns as well as on farms. Community gardens were organized, and the Boy Scouts stimulated by the "feed-a-soldier" slogan. Appeals were made throughout the country on the ground of patriotism and "war duty." The assistance of the press and the pulpit was enlisted in arousing the people to the necessities of the situation.

In all these efforts the state colleges of agriculture, with their experiment stations and their extension forces, took the leading part, and because of their information and organization were able to make effective plans and to reach the people in town and country as no other agency could. Everywhere these institutions, realizing the crisis and the needs, threw themselves into the work and were accepted as leaders. The great advantage of their extension service was demonstrated as never before, in serving as local centers for information and help, in organizing boys' and girls' clubs, in promoting canning and prevention of waste of food, and in many other ways.

Working in a national way, the U. S. Department of Agriculture effectively seconded the efforts of the states in a great variety of ways, among other things organizing systems for combating diseases and insects, assisted by corps of scouts to search out and report the appearance of these enemies, and in the fall elaborating a scheme for avoiding the Hessian fly by planting wheat at the proper time. It located seed supplies, helped to move starving cattle to regions of abundant feed, directed crops to market, etc. It spread broadcast enormous amounts of practical information, using the poster to arouse attention and give simple directions.

To an unprecedented extent, also, the agricultural public seemed ready to accept suggestion and follow recommendations made to them. In some parts of the country far reaching changes in the ordinary farm practice were brought about in this way, which it is believed will have a permanent beneficial effect.

An important effect of this agitation and personal experience in raising food, it is pointed out, is that the people as a whole have learned their dependence on the farmer. The participation by thousands of city and village people, old and young, in the garden work gave a new respect for agriculture and the toil and rights of the farmer. People who had never given thought to the actual origin of food now understand some of the uncertainties and difficulties the farmer has to face and meet. Furthermore, "the whole problem of food supply in all of its aspects has been given a new unity." The production of food, its transportation and distribution, and its wise use have all been brought together into one common problem, and the interdependence of the producers, the distributors, and the consumers has been made more clear. All over the country the food problem was organized in a manner often dreamed of but never before attained. The state and the nation learned to coöperate. As has been said, the experience thus gained "means the writing of an entirely new chapter in American agriculture and in economic life."

The Crop Year.[1]—The production of staple crops in the United States in 1917 was a bountiful one, except in the case of wheat, and showed the response of the farmer to the appeals made to him. The results were secured in the face of considerable obstacles, a winter which involved serious injury to the winter-wheat crop, an abnormally late spring and otherwise unfavorable climatic conditions, difficulty in securing seed supplies, and a serious shortage of labor.

At least three of the great staple food crops were the largest of record, *viz.*, corn, oats and potatoes, while barley, rye and buckwheat were all much above both the 1916 crop and the five-year average. The October estimate for the corn crop was considerably over 3 billion bushels, or nearly a half-billion bushels more than the five-year average. Corn was backward in development and needed a considerably later fall than usual for its maturity. Frosts caused extensive damage, reducing the earlier estimates by many million bushels and resulting in much soft corn. The oat crop was estimated at over 1½ billion bushels, and the white potato crop, although cut by early frosts, at 90 million bushels more than the five-year average and exceeding the 1916 crop by more than 167 million bushels. The crop of sweet potatoes was one of the largest, if not the largest, ever grown. The production of rice was less than in 1916 but above the five-year average. Kafir corns gave nearly double the yield of 1916, and sugar beets showed a considerable increase.

Such food crops as beans, onions and cabbages were double those of 1916, or even more (see *Horticulture*, *infra*). The commercial bean crop was probably the largest ever grown, estimated at 15,814,000 bu. Something over 12 million bales of cotton were predicted, about two million less than the average in 1911-15 but more than in 1916. The hay crop was large although less than in 1916. Tobacco was another record crop, estimated at 1,243,023,000 lbs., much above the average of previous years. These figures take no account of the enormous amounts of vegetables produced in the myriads of home gardens (see *Horticulture*, *infra*), and the unprecedented amounts of food saved by canning and drying, which will have an appreciable effect on the demand for the market supplies.

The wheat crop, on the other hand, was a disappointing one, being only about 20 million bushels in excess of the short crop of 1916 and fully 140 million bushels below the five-year average. The preliminary estimate for winter wheat was 417,347,000 bu., as compared with a five-year average of 542,615,000 bu. The spring-wheat crop was also short, being estimated at 242,450,000 bu., as compared with the five-year average of 263,746,000 bu. The estimate for all wheat was between 660 and 670 million bushels.

Wheat Surplus.—Under normal conditions the *per capita* consumption of wheat for food in the United States is about 5.3 bu., but under the abnormal conditions of 1916 it was nearly 10 per cent. less. Estimating the consumption of the 1917 crop at 10 per cent. below normal, the total requirement for food and seed in the United States would be about 582,101,000 bu. On the basis of the preliminary estimates for the 1917 production, the Bureau of Crop Estimates figured a surplus of nearly 78 million bushels for export, as compared with a surplus of 108,844,000 bu. for the five years 1909-13, when the exports averaged 102,518,000 bu.

The minimum wheat requirement of the European Allies for the season of 1918 was placed at 500 million bu., more than half of which the United States was asked to supply. Substitutes can be used in the form of oats, rye, and to some extent barley, but corn can be substituted only to a limited extent, since the Allies, except Italy, have few corn mills and corn meal does not keep well in shipping.

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[1] For the final December estimate of production of the principal crops, see the tables at the end of this department.

The world's wheat crop, according to reports from the International Institute of Agriculture at Rome, represents an increase of about 3.3 per cent. over 1916.

Cereal Programme for 1918.—For the first time in the country's history the Department of Agriculture undertook to work out an agricultural programme for 1918, beginning with the fall planting in 1917. This programme, issued in August, was made up after a study of the problem by the officers and experts of the Department, in consultation with specialists in many of the states. In arriving at its conclusions, the Department took account of the facts that there are limits to the possibilities of production, that many of the well established practices, such as rotations and farming systems, should be safeguarded, that special crops and markets have been developed after much effort, that a well balanced agriculture needs to be maintained, and that the risk of dislocation of production and marketing activities should be avoided. With the wheat supply below normal, even in peace times, it was recognized that the consumption of other cereals must be increased to satisfy the demand.

To supply the estimated needs of the United States and its Allies, and in part those of the neutral countries of Europe, it was calculated that it would be necessary to plant in the United States for 1918 about 48,700,000 acres of winter wheat, 19,000,000 acres of spring wheat, 5,600,000 acres of rye, 7,900,000 acres of barley, 45,200,000 acres of oats, and 111,500,000 acres of corn. This is an increase over 1917 of 15 per cent. for all wheat, 51 per cent. for rye, and five per cent. for oats; and is a decrease of six per cent. for barley and eight per cent. for corn. It represents a net increase of 4½ per cent. over the total 1917 acreage of these combined cereals. Much the largest increase recommended is in the case of rye, which may be successfully grown on soils where wheat can not, is less subject to winter killing, makes less fertilizer demands, and will take the place of wheat as a bread grain. The rye programme contemplated considerably increased acreage in the South in place of oats and winter cover crops. Late in the fall the indications were that something over 90 per cent. of the acreage of winter wheat called for in the programme had actually been planted.

Minimum Wheat Prices.—The Food Control Act, signed on Aug. 10, authorized the fixing of a minimum guaranteed price for wheat in case of an emergency requiring stimulation of wheat production. For the crop of 1918 this guaranty was made absolute until May 1, 1919, and the minimum price was fixed at not less than $2 per bushel for No. 1 northern spring wheat or its equivalent at the principal interior markets.

The competition of the Allied governments in purchasing their supplies of wheat had resulted in phenomenal prices. May wheat went to $3.18 on the Chicago Board of Trade, when the directors discontinued trading "as a patriotic duty." To protect the public the agency later constituted by Congress stepped in between the central purchasing agency of the Allies and the unorganized farmers. The Food Administration organized a Food Administration Grain Corporation and took over the purchasing of wheat for export, giving the Allies such supplies as can be spared, and controlling the margin of profit among trading, milling, baking, and distributing factors. The stock of this corporation is all owned by the Government. No other agency is authorized to export wheat. All flour mills producing 100 bbl. a day are required to be licensed and to buy their wheat through this corporation or in accordance with its regulations, thus stabilizing prices. Congress made an appropriation of $150,000,000 to finance these operations.

To determine the price which should be paid for the 1917 crop of wheat, a conference was called in Washington of persons representing various interests, as a result of which a basic price of $2.20 a bushel was fixed for No. 1 northern spring wheat or its equivalent in the principal interior markets, with a system of differentials between zones and between different grades and classes. Thus, using Chicago as a basis, the price at Kansas City and Omaha is five cents less, at Buffalo five cents more, and at New York 10 cents more, per bushel for the No. 1 northern or its equivalent. The price of other grades and classes is adjusted on the basis of the above, No. 1 soft red wheat being priced at two cents less than hard or northern spring, No. 2 of each grade three cents less than No. 1 of the corresponding grade, No. 3 six cents less, and No. 4 10 cents less. The Federal Grain Corporation began on Sept. 4 to buy and distribute the wheat crop of the United States at the above basic prices.

The underlying purpose of the Food Administration has been to stimulate production by assurance of reasonable profit to the farmers and to stabilize prices. The farmer can readily ascertain what he ought to receive for wheat of a certain grade at his zone point. If not satisfied with the price and the grade made to him by private dealers, he can ship to the Government at the nearest market. The Government will take all wheat offered at the price fixed. The effect of this assurance of price was to lead farmers not to rush their wheat to market but to bend their energies to preparing for the new fall crop. This action in turn led to the accusation that farmers were withholding their wheat and thereby causing the mills to run close with their flour output, a charge which was declared to be quite unfounded.

Department of Agriculture.—The regular appropriation for the Department of Agriculture for the fiscal year 1918, passed by Congress early in March, aggregated $25,929,113, an increase of nearly $3,000,000 over 1917 when allowance is made for the appropriation in 1917 for the purchase of land under the Appalachian Forest Reserve Act. Included in this amount are the Federal appropriations for the agricultural experiment stations and for agricultural extension teaching. Many of the enlarged appropriations are to provide for increased administrative and regulatory activities, for the growth of the coöperative demonstration work, the market-news service, the development of dairying and animal husbandry, additional soil surveys, and the improvement of the national forests.

The Act materially enlarged the funds for the combating of a number of serious pests and diseases of animals and plants. It converted the Office of Markets and Rural Organization into the Bureau of Markets, and contained a new item of $50,000 authorizing the Bureau to investigate the handling, manufacture and distribution of agricultural food products, with special reference to the manipulation of markets or the control of food supplies. It allowed an increase of $71,000 for the market-news service as to fruits and vegetables, and gave small increases for market reports on live stock and meats and for coöperation with the States in marketing studies and demonstration. The new Bureau will administer the U. S. Grain Standards Act, the Warehouse Act, and the Cotton Futures Act.

For conducting the citrus-canker campaign the appropriation was $430,000, and for white-pine blister rust, $300,000, both of which are expected to be supplemented by local aid. Increases for the farmers' coöperative demonstration work will enable the development of the county-agent work, the boys' and girls' clubs, and the farm-management demonstrations, and make possible a considerable extension of the work with farm women. In other branches of the Department's activities the appropriations were in the main for continuance on substantially the existing basis.

During the year the Department promulgated standards for grades of wheat under the Grain Standards Act (*A. Y. B.*, 1916, pp. 451, 469). It also succeeded in eliciting the coöperation of the storage companies of the country, so that practically all of them are reporting monthly on cold-storage holdings of food products, including meat, poultry, eggs, butter, cheese and apples. Reports upon these are issued monthly by the Department. These reports are encouraging as showing the very large amounts of food in storage, in response to the prospective demands of the war. For example, on Aug. 1

there was over 100 million pounds of frozen beef in storage, or over 50 per cent. more than at the same time the previous year. Frozen poultry in cold storage showed an increase of nearly 500 per cent. over the quantity in the refrigerating plants in 1916.

The publication activities of the Department were unusually extensive, especially after the declaration of war, immense amounts of popular literature being sent out to the public or distributed through the county agents. Owing to the great increase in the administrative duties of the Department in recent years, authorization was procured through the Food Production Act for the appointment of two additional Assistant Secretaries of Agriculture. Under this provision Prof. Clarence Ousley, director of agricultural extension at the Texas Agricultural and Mechanical College, and Dr. Raymond A. Pearson, president of the Iowa State College, were appointed Assistant Secretaries. In addition, several assistants to the Secretary were employed temporarily for special services. Few exemptions of the Department's force from military service were asked and the losses of men to that service or to other positions were very heavy.

Agricultural Experiment Stations.—The year furnished a striking demonstration of the utility of the experiment stations and the vast fund of information they have accumulated, which served in large degree as the basis for the measures which were put in operation for increasing and safeguarding agricultural production. Like other institutions they suffered heavily from the loss of men who enlisted in the Army or in other lines of war service. Very few exemptions from military service were granted to station employees. In most of the states their officers held prominent places in the councils of defense and food-supply committees or in charge of the state food administration.

A new experiment station was authorized for Alaska, to be located in the Matanuska Valley on the line of the new government railroad. In Idaho provision was made for a high-altitude substation, to be located in a region of 6,000 ft. or more elevation. A new experiment station for middle Tennessee was authorized, to be located on land provided by the county securing the institution, and up to $100,000 was granted for the construction of the necessary buildings; a farm costing approximately $100,000 was selected for the station. Massachusetts provided for the maintenance of a market-garden substation at Lexington, the purchase of land for which had been previously authorized. In North Carolina seven test farms conducted by the Department of Agriculture were given the status of substations of the main experiment station at Raleigh, emphasizing their experimental features. The appropriations made for the main and substations in Texas amounted to over $400,000 for the biennium.

A new dairy building, one of the largest and most complete of its kind, was dedicated at the Nebraska University and Station in the early spring. New agricultural buildings were completed or in process of erection in Delaware and West Virginia, and in the latter state a gift of an estate of 900 acres was received, well equipped with buildings and a herd of 125 pure-bred Ayrshire cattle, the total value being about $120,000.

There were a considerable number of changes in the management of the stations during the year. In Indiana Arthur Goss was succeeded by C. G. Woodbury as director; in Minnesota R. W. Thatcher succeeded A. F. Woods; and in South Carolina, Prof. H. W. Barre succeeded J. N. Harper. Dr. I. D. Cardiff ceased to be director of the Washington Station in the spring, and W. L. Carlyle, director of the Oklahoma Station, resigned in October.

Dr. Robert H. Loughbridge, a pioneer in research in soils and soil chemistry, long connected with the California Station and retired in 1909, died on July 1.

Agricultural Extension Work.—The agricultural extension work grew steadily during the year. Part of this growth was due to the natural development of the Federal appropriation, which automatically increases a half-million dollars a year, requiring an equal increase on the part of the states, and part was a result of the emergency appropriation under the Food Production Act (see *supra*). The latter provided $4,348,400 for this specific purpose.

The amount of funds for extension work in the fiscal year 1917 aggregated about $6,000,000 from state and Federal sources, exclusive of the emergency funds. There were about 2,000 county agents, home-demonstration agents, club leaders, and other workers in the regular work, and up to the middle of October about 1,600 others had been appointed under the emergency funds. Ultimately, it is expected that the number of these new appointees will reach about 4,000, furnishing help to every agricultural county. On account of the necessity of largely increasing the extension forces, and the difficulty of securing properly qualified and experienced men for this work, there was considerable liberality in the exemptions granted to men called by the draft.

The emergency funds were designed to be used mainly for increasing production and the conservation of food products by the aid of the county agents, home-demonstration agents, and boys' and girls' clubs. A new feature under this Act was the extension of the work among women to those in towns and cities, to teach and promote canning and drying to save food materials, economy in buying and storing, and the prevention of waste. The canning campaign was unprecedented, reaching every part of the country and leading to the putting up of enormous quantities of products for winter use. So active and widespread was this work that the question of containers became a serious one, and special arrangements had to be made by the Department of Agriculture to ensure supplies of tin and glass cans. A deliberate and systematic attempt to interfere with the canning campaign by circulating reports that the Government intended to commandeer canned goods from every family reached such proportions in early fall that it became necessary for the Government to send out broadcast an emphatic denial.

An interesting pamphlet, entitled "Handbook on Farm Bureau Organization for County Agents," was issued by the Department of Agriculture, explaining the purpose and operations of these bureaus.

A novel development which recognizes the interdependence of the farming and the business interests of towns and cities was the appointment by the Boston Chamber of Commerce of an agricultural expert to investigate these relations from a broad and liberal viewpoint, with the purpose of getting at the real basis of difficulties which have arisen in the past and harmonizing these differences.

Peanuts and Velvet Beans.—In the past few years there has been remarkable development in the growing of peanuts and velvet beans in the southern states. This was especially the case in 1917, peanuts being substituted for cotton in some sections reached by the boll weevil, and velvet beans being resorted to for increasing the supply of forage and feed. The area planted to peanuts, 1,245,000 acres in 1916, was increased to over 2,000,000 acres in 1917. It was prophesied that the crop would have a value of $75,000,000. Although the bulk is used for forage, the use of the plant for human food has become quite extensive. The grinding of peanuts for oil production has greatly increased, the oil being used for salad purposes, in making oleomargarine, soap, etc.

The introduction and development of early maturing varieties of velvet beans have led to a remarkable extension of the area devoted to the crop, and in 1917, under pressure of the need for increased feed grains and forage, the planting extended throughout the southern states. The acreage was probably fourfold that of 1916, preliminary estimates placing it at close to 5,000,000 acres. The crop is usually planted with corn or a similar crop to hold up the vines, and is often pastured off, although of late the picking of the pods and grinding them along with the seeds to produce velvet-bean meal has become more common. That product was abundant in the market during the season 1916-17 and was one of the most economical feeds to be had. (See also *Live Stock, infra.*)

Fertilizers.—Shortage and high prices of fertilizing materials accompanied and made more difficult the efforts for maximum production. Potash has been very scarce since the war cut off the supply from Germany, and efforts to develop American sources have been very active. As a result there has been considerable increase, but the demand for potash for munitions has made the price wellnigh prohibitive for agricultural uses. More potash was produced during the first six months of 1917 than during the entire year 1916. The total amount for these six months was reported by the U. S. Geological Survey as a little over 14,000 tons of potassium oxide. The estimated output for the year was in excess of 25,000 tons, which is about 10 per cent. of the average normal yearly consumption of the country before the war.

A shortage of phosphates was due to the scarcity and high price of sulphuric acid, used in treating raw phosphate, and to the difficulties of transportation. The farmers were urged to order early and manufacturers to ship their goods in carload lots. Congress made an appropriation of $10,000,000 to secure nitrate of soda to be supplied to the farmers at cost.

Special attention was given to urging better use of manure on farms. The Department of Agriculture estimated that one-half the manure in the United States is not used as a fertilizer, representing an annual loss of material worth $1,200,000,000. Much of the present loss might be avoided by proper storage and handling on the farms. (See also XXIII, *Agricultural Chemistry*, and *Industrial Chemistry*.)

Farm Labor.—A shortage of labor for farms had begun to be seriously felt before the war, but it was greatly accentuated by our entrance into it and the demands of manufacturing industries which offered wages the farmer could not meet. The Government declined to exempt farmers and farm laborers as a class from the operation of the draft, but to afford as large a measure of relief as possible, men on farms were placed mainly in the last group to be called to the colors, and were not required to report until Oct. 1. The Departments of Agriculture and of Labor early in the year entered into coöperation, the former conducting a survey of the farm-labor needs and supply in rural districts and assisting state agencies in organizing it, and the Department of Labor devoting its employment service to procuring and distributing workers not of the regular farm-labor class. Many of the agricultural and other colleges closed early or released students to engage in agricultural work, usually as farm workers. In some of the agricultural colleges as high as 90 per cent. of the undergraduate body had gone out into either military or agricultural service by the first of May. Thousands of students took part in the wheat harvest.

While the shortage of labor was quite general the country over, many sections of the South suffering through the migration of colored laborers to industrial centers, the situation was more acute in the East because of the large demand for labor by manufacturers and the kind of agriculture, which requires more labor and of a different kind. Green labor from the city, to work for short periods, was found of only limited value, since most farm work calls for skill which can only be acquired by several seasons on the farm.

The withdrawal of such large numbers of men from farm work for military and industrial purposes left the farm-labor outlook for another year in serious condition. This will be a severe handicap to the programme for greater production on farms.

DAIRYING

MILTON D. MOORE

The Milk Supply.—The year has been marked by the continued general unrest of dairy producers. The unprecedented high prices of feeding stuffs, the scarcity and advanced cost of labor, and the increased demand for milk for condensing purposes are some of the factors that have been the basis of demands for higher prices for milk. The milk producers' organizations have been greatly strengthened and their efforts have been directed toward obtaining higher prices.

On account of unsettled labor conditions and feed prices, the price contracts between producers and dealers are being made for one and two months instead of the customary six months. The trend of prices received by dairymen for milk is indicated by the advance in prices during the past few years at New York. The average net prices to shippers at points subject to a freight rate of 26 cents per can for grade B milk testing 3.7 per cent. fat at New York were $1.42 per can (40 qts.) in 1915, $1.55 in 1916, and $2.05 for the first nine months of 1917. The Dairymen's League price for milk of this quality is equivalent to $2.87 per can for October, and $3.08 per can for November, 1917. The receipts of milk in New York in August, 1917, were 1,839,321 cans, and in August, 1916, 1,757,874 cans. The price of milk to the consumer has been advanced to meet the increased prices to producers and increased cost of handling and distribution. As a result the customary prices of eight and nine cents per quart of a year earlier have been advanced pretty generally to 14 cents per quart. The Federal Food Administration is making an extensive study of the cost of production and distribution of milk.

Another outstanding feature of the year was the absence of the shortage of milk which heretofore has invariably occurred during the fall and winter. Among the causes of this were the stimulation of production brought about by higher prices and an exceptionally good pasture season, and the increased prices to the consumer, which have greatly curtailed the consumption of milk.

The Dairy Industry in the South.—Diversified farming in the South has been greatly hastened by the cotton boll weevil. Millions of acres heretofore in cotton have grown in 1917 enormous crops of corn and velvet beans (see *Agriculture, supra*). In the utilization of this surplus feed dairy farming is taking a leading part. Agricultural extension workers in Louisiana and southern Mississippi and Alabama report that dairy farmers in those regions will feed their cattle during the winter of 1917-18 on home-grown feeds entirely. The creamery-men's association of Mississippi has adopted cream standards and cream is being paid for in that state on the basis of quality. Mississippi thus starts her creamery industry under conditions which the great dairy states of the North have been striving to attain for many years.

The small coöperative cheese factories being established in the mountains of North Carolina and Tennessee are proving very successful. About 15 of these establishments are in operation in North Carolina and five in Tennessee. Cheese experts of the U. S. Department of Agriculture report that cheese made at these factories is equal to that made in the great cheese-making states of the North.

Dairy Investigations.—The Missouri Experiment Station has demonstrated that the deleterious effect on the market quality of butter of feeding large quantities of cottonseed meal may be entirely overcome by feeding corn silage with the cottonseed meal. The feeding of corn silage was found not to lessen the keeping quality of butter, which is greatly improved by feeding cottonseed meal. It was also shown that feeding a small amount of cottonseed or cottonseed meal when cows are turned to pasture in the spring will improve greatly the standing-up and keeping qualities of butter. The prevailing belief that all animals which receive leafy forage as a considerable part of the ration consume and digest an abundance of mineral nutriment has been found untrue for cows giving a liberal quantity of milk. The Ohio Station has demonstrated that even with rations of common practical feeds especially selected for maximum supplies of calcium, magnesium, and phosphorus, the mineral metabolism of heavy milking cows is deficient. These results have a practical bearing on the inability of cows to breed after forced milk production or their failure to maintain consecutive high-production records.

The New York Cornell Station has found that clarification apparently increases the bacterial content of milk from 87 to 115 per cent. However, bacteria increase more rapidly in unclarified milk than in clarified milk. About 99 per cent. of the insoluble dirt in milk is removed by clarification. In a study of imported and domestic Swiss cheeses the Wisconsin Station finds that long continued curing and salting in a warm room are necessary to make domestic Swiss cheese comparable with the imported product. Experiments by the Dairy Division of the U. S. Department of Agriculture indicate that it is commercially practicable to cool hot pasteurized milk in containers not larger than quart bottles by forcing cold air downward over the containers. On account of overheating portions of the milk, the process of pasteurizing milk in bottles by forcing hot air over them seems commercially impracticable. (See also XXIII, *Biological and Food Chemistry.*)

The effect of low-yielding cows upon the cost of producing milk is emphasized by the results of a study by the U. S. Department of Agriculture of dairy farms in Wisconsin, Michigan, Pennsylvania and North Carolina. With cows producing less than 3,000 lb. of milk per year the cost of producing milk on these farms was $3.57 per 100 lb., while for cows giving 6,000 lb. of milk, the cost was $1.86, and for those giving over 8,000 lb. the cost was only $1.70, per hundredweight.

A New World's Champion Dairy Cow.—The four-year-old Holstein heifer, Queen Piebe Mercedes, recently completed a year's semi-official test with a production of 30,230.2 lb. of milk and 1,111.285 lb. of milk fat.

Necrology.—Dr. H. W. Conn, widely known as a pioneer worker in dairy bacteriology in this country, died at Middletown, Conn., on April 18. Dr. Conn's long period of service was spent entirely with Wesleyan University. He was for a number of years bacteriologist of the Connecticut Storrs Station and director of the Cold Spring Harbor Biological Laboratory, and was one of the founders, and for 15 years president, of the Society of American Bacteriologists. He was one of the earliest workers in this country on problems connected with certified milk, the use of pasteurization and pure bacterial cultures in butter making, and the bacteriological examination of city milk supplies.

Bibliography.—In May, 1917, appeared the first number of the *Journal of Dairy Science*, the bi-monthly organ of the American Society of Dairy Science. The journal contains both original articles and reviews, and is edited by J. H. Frandsen of the University of Nebraska, assisted by a board of 21 editors.

Among the books of the year are:

Lane-Claypon, J. E.—*Milk and Its Hygienic Relations.* (New York, Longmans, Green, 1916.)
Larson, C. W., and Putney, F. S.—*Dairy Cattle Feeding and Management.* (New York, Wiley, 1917.)
MacNutt, J. S.—*The Modern Milk Problem in Sanitation, Economics, and Agriculture.* (New York, Macmillan, 1917.)
Parker, H. N.—*City Milk Supply.* (New York, McGraw-Hill, 1917.)

LIVE STOCK

George M. Rommel

Meat Production.—The total amount of meat produced in the United States in the year 1917 was probably about the same as in the preceding year. Exports of meat products showed a slight decrease for the fiscal year 1917, the total being 2,004,907,776 lb. of meat and meat products as compared with 2,005,566,309 lb. for the fiscal year ended June 30, 1916. Official reports showed a decided increase in the slaughter of cattle in the fiscal year 1917, the number being 1,800,000 head over the preceding year and more than 1,000,000 more than in any preceding fiscal year since the establishment of Federal inspection. The number of swine slaughtered at plants under Federal inspection was 14,210,847, a decrease of more than 200,000 below the preceding fiscal year. There was a slight decrease in sheep. The animals slaughtered at plants under Federal inspection represent approximately 60 per cent. of the total number slaughtered in the United States.

Prices of meat animals have soared to unheard-of figures. In September, 1916, all meat animals on the Chicago market were selling on an $11 basis. A year later they were selling at an $18 level, and hogs had sold at $20 for 100 lb. live weight. The extremely heavy exportations and the grain scarcity explain this situation.

Feed Supplies.—There was a feeling of great uncertainty throughout the country on account of the scarcity of grain during the first six months of the year. Prices of corn and other feeds reached figures which were almost prohibitive and which caused great uneasiness among live-stock farmers. During the fiscal year ended June 30, 1916, there was a decided decrease in the amount of grain exported as compared with the fiscal year preceding. In the fiscal year ended June 30, 1917, the grain exports were larger than in 1915 or 1916. The embargo upon exports, laid during the past year, had considerable effect on some products, such as cottonseed meal, and a larger amount of such feed stuffs will probably be fed in the United States than formerly.

With the exception of wheat, cereal production in the United States in 1917 greatly exceeded that of 1916 (see *Agriculture, supra*). This is sufficient to warrant the expectation of moderate corn prices and make the prospects for the feeder good, with the strong probability of higher prices for meat animals. Much of the corn in many sections was soft, which will compel its being fed. Normally from 75 to 80 per cent. of the corn crop is fed to live stock. The hay crop in nearly all sections was short and the saving of straw and corn stover for roughage was therefore necessary.

The velvet bean has suddenly assumed decided importance in the South as a feed for live stock, the increase in 1917 plantings over those of 1916 varying all the way from 100 per cent. in Alabama to 3,000 per cent. in South Carolina (see also *Agriculture, supra*). While this will not have a profound effect on the animal industry of the entire country, its effect will be felt, and the velvet-bean crop of 1917 is an indication of the amount of feed which is available to farmers of southern territory. So far as grain and feed supplies are concerned, viewing the whole country in the large, the indications are that live-stock production will continue to be profitable.

The Government and the Live-Stock Industry.—Live-stock producers were much encouraged when the Secretary of Agriculture and the Food Administrator called a conference of representative live stock men to meet at Washington on Sept. 5-7. The conference called together a body of men representative of every phase of the meat-animal and dairy industries, who devoted three days to the discussion of problems of live-stock production and particularly to the situation which faces the country on account of the entrance of the United States into the European War. The plans of the Department of Agriculture for increased production were presented, and considerable time was devoted to a discussion of the question of fixing of prices, which the Food Administrator stated was not his intention or his desire, but rather a stabilizing of prices. The first action by the Food Administrator was announced on Nov. 3 when the plan to be followed in regard to purchases of pork products were published. This plan has four salient features (1) rigid control of the packers, (2) the elimination of sudden and apparently unwarranted fluctuations in the prices of live hogs at the central markets, (3) an expression of belief that the price of hogs on the Chicago market will not fall below $15.50 per 100 pounds live weight in the immediate future and (4) a plan to determine the value of hogs of the 1918 crop to guide the Food Administrator in the purchases he makes on Government and Allied account. This plan is based on Chicago prices and contemplates determining hog prices per 100 pounds at 13 times the average price of a bushel of corn. Complete details of the operation of the plan are not yet published (Dec., 1917). It is an attempt to apply scientifically a business fact with which corn belt farmers are familiar—that on the average corn prices determine hog prices and that Chicago hog prices set hog prices for the entire country. It is not expected that any attempt will be made to stabilize beef prices.

The Department of Agriculture was given a considerable appropriation by Congress to use in emergency work in the conservation and promotion of the live-stock industry (see *Agriculture, supra*). Early in July the Department inaugurated a movement to save some of the drought-stricken cattle of western Texas, where the drought, having continued intermittently for nearly two years, had reached a point where cattle were beginning to die on the range. The Department placed men in Texas to locate drought-distressed cattle and others in the southeastern territory to bring to the attention of the owners of land east of the Mississippi the possibility of obtaining some of the cattle which were being sacrificed in Texas. Heretofore the Texas ranchman had always looked North and West for his outlet in times of surplus or distress. To the end of December approximately 150,000 head of cattle had been moved east, some of them going as far as the State of Florida.

The Swine Industry.—The country is face to face with a serious situation in regard to the swine industry. Conservative figures indicate that an increase of 15 per cent. over the year 1917 must be produced in the year 1918. A great sacrifice of fat-producing animals has been a concurrent incident of the war and the necessity for increased hog production in the United States is imperative. Heavy slaughtering of hogs in the last half of the calendar year 1916 caused a shortage in the spring pig crop of 1917, and the estimates of the Department of Agriculture showed about five million less hogs on hand on Sept. 1, 1917, than on the corresponding date of 1916. A campaign was begun by the Department of Agriculture in October in coöperation with the agricultural colleges to bring about the desired increase. The total increase for 1918 was allotted to the various states on the basis of the 1917 corn crop. An active campaign is under way. The announcement of the Food Administrator and the behavior of the market are helping materially. The shortage of brood sows is being overcome by taking galts out of the feed lots. A huge corn crop and an enormous market for pork supplies justify an expectation of profitable swine breeding and feeding.

The Sheep and Wool Industry.—The winter of 1916-17 was one of the severest ever known on the western range. Snow storms came early, and localities which are usually blown clear of snow and are therefore available for winter range were covered with snow a great part of the time. Ranchmen have learned to supply themselves with hay but the early onset of winter and its intense severity caused many of them to be out of feed before January had passed. Hay reached ruinous figures; as high as $45 per ton was paid and some Wyoming sheep ranchmen actually shipped hay in by express during the period of most severe shortage. Heavy losses of breeding stock and a short lamb crop resulted. Losses in breeding stock were variously estimated at 25 to 50 per cent., and the lamb crop ranged from 20 to 50 per cent. below normal.

Much concern was felt early in the year on account of the operation of the 640-acres homestead law (see IX, *Public Lands*), but the symptoms of panic have abated and serious liquidation on account of the law is unlikely in the immediate future. Ranchmen are holding all ewes suitable for breeding, and the curious situation is observed of ewes being held at higher prices on the western range than on eastern farms.

At the same time farmers are keenly interested in the rehabilitation of the sheep industry. Farm demand competes with packer buyers in the markets and few ewes suitable for breeding purposes are being slaughtered. The dog problem is being solved with the development of interest in farm sheep raising. During the year dog laws of a stringent character have been passed by the legislatures of New York, Illinois and Iowa. The New York law permits a farmer to kill strange dogs which come on the farm unaccompanied by a person. The Iowa law has been dubbed a "curfew" law and requires all dogs to be tied up or shut up at night.

Wool prices ruled high during the year. With a world shortage, insufficient shipping facilities for overseas clips, and enormous military demands, the wool-supply problem is one of the most critical with which the Government has to deal. Never in the memory of those now living has it been more necessary for American farmers to devote attention to the building up of a permanent, systematically managed, farm sheep industry.

VETERINARY MEDICINE

WILLIAM A. HOOKER

The Campaign against Live-Stock Diseases.—With the great world shortage in food supply, especially of animal products, and the great need for horses in conducting the war, the conservation of live stock through the prevention and cure or eradication of disease, estimated by the Secretary of Agriculture in 1915 as causing an annual loss of no less than $212,000,000, has become of greatly increased importance. As an aid in winning the war, a more intensive campaign against live-stock diseases and pests has been inaugurated, and in this movement the Federal Bureau of Animal Industry has led the way in work against bovine tuberculosis, contagious abortion, Texas fever, dourine, shipping fever, vesicular stomatitis, scabies, hog cholera, etc. In order to handle the work of combating tuberculosis in cattle and to carry on other activities for the conservation of the animal resources of the country, two new divisions in the Bureau of Animal Industry were created by the Secretary of Agriculture on May 1, one the Tuberculosis Eradication Division, and the other the Tick Eradication Division. For the conduct of the work Congress made liberal appropriations, increasing that for the Bureau of Animal Industry for the year beginning July 1 by $534,580 to an aggregate of $3,355,326, in addition to the permanent appropriations for meat inspection, etc. For the eradication of the cattle tick, including $50,000 for live-stock and dairy demonstration work, $631,560 was appropriated. For hog-cholera investigations and control work $413,100 was appropriated, of which $172,240 was made available for the enforcement of the virus-serum-toxin provisions of the act of 1913 (*A. Y. B.*, 1913, p. 476). For the control work with dourine the appropriation was increased from $75,000 to $99,000, of which $50,000 was made immediately available, this affection having been found to be prevalent over a wider area than was at first anticipated. Inspection and quarantine work of the Bureau against animal diseases received $628,280, an increase of $103,500, of which amount $75,000 is to be used for the development of methods for eradicating tuberculosis in live stock. The Food Production Act of Aug. 10, contained an additional appropriation of $885,000 partially available for similar purposes.

The Veterinary Profession and War Service.—At the annual meeting of the American Veterinary Medical Association, its fifty-fourth, which convened at Kansas City, Mo., on Aug. 20, with an attendance of nearly 1,500, the following officers were elected: Dr. Frederick Torrance, veterinary director-general of Canada, president; Drs. John H. Blattenberg, C. M. Haring, H. Jensen, John S. Anderson, and S. H. Ward, vice-presidents; Dr. L. A. Merillat, secretary; and Dr. F. H. Schneider, treasurer. At this meeting the association sent a message to the President and the Secretary of War offering the services of the organization as a unit. Dr. C. A. Marshall was appointed chairman of a special committee on army service. The president of the association appointed a committee of five on army service as soon as war seemed inevitable and a representative of this committee has been at the service of the Surgeon-General of the Army.

The work of the veterinarian in the war has been most praiseworthy. The wastage of horses has been lowered to considerably less than 10 per cent. a year, as compared with 55 per cent. in the Boer War. More than 200 veterinarians in the employ of the Federal Bureau of Animal Industry were within the draft age, and they and many others enrolled in the Veterinary Officers' Reserve Corps.

Tuberculosis.—In order to inaugurate control work against this most insidious disease of cattle, swine and poultry, Congress appropriated a total of $300,000. It is the belief of the Bureau of Animal Industry that tuberculosis can be eliminated from all the cattle and all the swine in the country, just as pleuropneumonia and foot-and-mouth disease of cattle have been, and as work is now in progress with hog cholera, Texas fever, dourine and sheep scab. In the conduct of this work offices were opened at several points, coöperating with state officials and live-stock owners in the eradication of the disease from pure-bred herds and the establishment of accredited herds. For the past six years Minnesota has required the seller of pure-bred cattle to give to the purchaser a certificate of health issued by the live-stock sanitary board showing the animal to have been tested within a year and to be free from tuberculosis. North Dakota has now enacted a similar law, and other states are expected to follow.

The successful eradication of tuberculosis from the Iowa Agricultural College herd of Shorthorn and Angus cows by means of a modified Bang system suggested by Schroeder for managing a reacting herd with the least cost and minimum loss was reported upon by Prof. W. H. Pew. Under this method the cows are kept in the open both winter and summer, calves dropped in the quarantine pasture being permitted to nurse their dams until weaning time, from six to 11 months of age. At that time the calves are tested; they are retested in 60 to 90 days, and non-reactors are then taken to the clean herd. Of 21 tested calves that were dropped in quarantine from 1908 to 1914 and permitted to nurse their dams until weaning time 18 passed the test and only three reacted.

Sheep Scab.—The work of eradicating sheep scab through quarantine and the dipping of affected animals in a weak nicotin solution or in a solution of lime and sulphur has progressed rapidly. On Oct. 15 the quarantine placed against the whole state of Texas on July 1, 1914, was removed from 107 counties, an aggregate area of 121,451 sq. miles and nearly one-half the area of the whole state. The disease has been brought under control to such an extent that quarantine has now been raised from most of the western states, there remaining only 10 counties in California and a portion of Texas.

Texas Fever and Cattle-Tick Eradication.—The eradication work with the cattle tick was pressed with such vigor that an area of 40,111 sq. miles was released from quarantine during the fiscal year ended June 30. The liberation on Dec. 1 of an additional area of 65,520 sq. miles in 9 States included all that remained in Mississippi and the entire State is now free from the tick menace. As a result 1917 stands out as a red letter year with a record of 70,754 sq. miles, or 20,000 sq. miles more than the previous high record of 1912, and a broad wedge driven through the tick-infested area to the Gulf of Mexico. The action of the citizens of Jefferson and Harris Counties, Texas, in making dipping compulsory and not waiting for the state compulsory dipping law to become effective in 1922 is illustrative of the popularity of the work. In order to prevent the spread of the disease from Porto Rico to the United States, a quarantine was placed upon the entire territory on July 2. The Federal Experiment Station at Mayaguez erected a dipping vat and is inaugurating work with a view to eliminating the cattle tick from the island.

Forage Poisoning.—Graham announced the isolation from cases of forage poisoning of an anærobic bacillus which closely resembles the meat-poisoning organism (*B. botulinus*). The clinical symptoms accompanying artificial *B. botulinus* infection in horses and mules were similar to those recognized in natural outbreaks of forage poisoning in central Kentucky, and an antitoxin serum prepared protected against both *B. botulinus* and the anærobic organism isolated from the affected animals.

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DISEASES OF PLANTS

WALTER H. EVANS

Societies and Institutions.—A conference on the white-pine blister rust, called to discuss ways and means for controlling the spread of this disease, was held at Albany, N. Y., on Nov. 20 and 21, 1916. The third annual field conference of cereal pathologists of the American Phytopathological Society met at Madison, Wisconsin, on July 9-11. Grain rusts, the relation of barberries to cereal-rust epidemics, and state and Federal legislation were the subjects discussed. The conference favored the wider use of seed treatment for the prevention of diseases due to seed-borne fungi, a commission for the study of the barberry problem, and action to secure adequate supplies of fungicides and insecticides. On July 1, there was organized in the U. S. Department of Agriculture a Plant Disease Survey, to collect information regarding the prevalence, distribution, severity, etc., of plant diseases throughout the United States. Collaborators have been appointed in every state to aid in the collection of data. A bulletin is issued at frequent intervals during the crop season giving summaries of important data collected. Special surveys have been made of the diseases of cereals, potatoes, beans, grapes, cabbage and tomatoes. Dr. Charles H. Peck, for many years botanist of New York State and well known for his work on fungi, died on July 11, in his eighty-fifth year.

Legislation and Regulation.—Appropriations made by the Sixty-fourth Congress in its final session for the investigation and control of plant diseases by the Department of Agriculture exceeded $1,062,000. Of this amount $250,000 is for citrus-canker control contingent on the appropriation by the several states of equal or greater amounts, and $150,000 for coöperative work on the white-pine blister rust under similar conditions. Different states in which the citrus canker and pine blister rust are becoming serious have contributed their quotas of funds, and the work of eradication is progressing energetically. An appropriation of $125,000 was made to the Federal Horticultural Board for carrying on its inspection and quarantine work. In an emergency appropriation for the Department of Agriculture $441,000 was provided for the prevention and control of plant diseases and injury from insects attacking agricultural crops. Federal quarantines have been declared against the introduction from Europe and Asia of any species of pine subject to the white-pine blister rust and all species of Ribes and Grossularia, the alternate hosts of the fungus. A quarantine of all states east of and including Minnesota, Iowa, Missouri, Arkansas and Louisiana became effective on June 1, and the movement of five-leaved pines, currants and gooseberries to points west of this line is now prohibited. Certain interstate shipments are likewise forbidden. About eighteen states and the Dominion of Canada also have created quarantines on account of the white-pine blister rust. The quarantine against the admission of maize from Asia, Oceania, Australia, etc., has been modified so as to admit its importation under regulations. A Commission of Plant Sanitation has been established in Cuba by presidential decree, and the importation into that country of coconuts, bananas, citrus trees, etc., is prohibited on account of diseases and insect pests.

Nonparasitic Diseases.—A disease of grapes in California known as "little leaf" has been described by Bioletti and Bonnet. This trouble is quite serious in certain regions, rivaling in destructiveness phylloxera and powdery mildew. The cause of the disease is unknown and no effective method of control has been demonstrated. Freiberg has contributed the results of a physiological study of the mosaic disease of various plants, and he concludes that the infective principle is an enzyme. The reproduction of the enzyme can be accounted for on physiological grounds, although the original factors are as yet unknown. A serious disease of unknown origin is reported by Stevenson as destroying sugar cane in Porto Rico. The disease bears some resemblance to the sereh disease of the East Indies. Mazé has described a toxic chlorosis of maize in France which differs materially from the chlorosis due to a lack of iron, sulphur, etc. Lightning injury to many field crops has been reported recently by various writers. Swingle and Morris have found that arsenicals used in spraying fruit trees cause injury when absorbed through wounds, lenticels, latent buds, or cracks in normal rough bark.

Parasitic Diseases: Cereal Diseases.—As a result of a study of herbarium material it has been found that the stripe rust of wheat due to *Puccinia glumarum* has been present in the United States for at least 25 years and is not of recent introduction, as has been reported. E. F. Smith reports the occurrence of what is believed to be a bacterial disease of wheat in Indiana, Arkansas, Oklahoma, Kansas and Texas. The Federal Horticultural Board has found the Physoderma disease of maize quite widely distributed in the states south of Virginia and Kentucky. A quarantine against the Orient was established on account of this and other diseases of maize. Additional data have been presented by Reed, Stakman and others indicating physiological races of mildews, rusts and smuts of grains and grasses. Hungerford claims that *Puccinia graminis* does not infect the wheat plant through seed-borne spores. In Australia, where barberries do not exist, *Puccinia graminis* is believed to winter over on native grasses.

Forest-Tree Diseases.—Great interest is being taken in the United States in the white-pine blister rust that is apparently established in many of the northern and eastern states. This fungus has currants and gooseberries for its alternate host plants, and Spaulding and Gravatt have been unable to find any species or variety of Ribes or Grossularia wholly resistant to infection. McCubbin believes the fungus may winter over on the currant, but Spaulding has been unable to find any evidence of such overwintering, apparent cases being caused by reinoculation. Ants, weevils, sowbugs, snails and slugs have been found to carry the spores on currants. Rankin thinks the removal of all infected pines and currants for a distance of 500 ft. will check the spread of the disease. Metcalf, reviewing the situation regarding the chestnut bark disease, claims that there is no evidence of the disease's being naturally checked. It is now known to be present in at least 13 states, having reached the northern and eastern limits of chestnut growth. The American chestnut appears most subject to attack, while certain foreign species seem to show some resistance to the fungus. Hybrids between the Japanese and Chinese species and between the American chinquapin (*Castanea pumila*) and the Japanese chestnut have shown a high degree of resistance. On account of the great demand for rubber, special attention is being given to diseases of plantation rubber trees in Java, Burma and Malay.

Diseases of Fruits and Fruit Trees.—The campaign for the eradication of citrus canker in the Gulf states is being actively pursued by Federal and state authorities. Stevens has found the cause of the disease, *Bacterium citri*, can be isolated from soils under diseased trees and that it retains its vitality for more than a year in soil. As a result of inoculation experiments Jehle has found practically all kinds of citrus trees subject to canker, and also that the wild lime and orange jessamine could be inoculated with the organism. A new bacterial disease of oranges and lemons due to *Bacterium citrarefaciens* has been described from California by Lee. A soft rot of lemons caused by a species of Oospora is reported by C. O. Smith. A root rot of apple trees in North Carolina and Virginia was almost simultaneously reported by Wolf and Cromwell and Fromme and Thomas. As a result of studies of the temperature relations of apple rot fungi Brooks and Cooley have shown the advantage of immediate storage at low temperatures to prevent the spread of decay. A bacterial disease of cherries in Colorado has been described by Sackett. The bacterial blight of English walnuts has been reported in New Jersey, Delaware and Pennsylvania. The organism does not appear to be as active as it is in California. A bacterial disease of the apple has been described by Rose, the organism causing blisters on the fruit and a roughening of the bark. The downy mildew of the grape has just been reported for the first time in Victoria, Australia. Matz has described a Rhizoctonia leaf blight of figs in Florida.

Miscellaneous Diseases.—Potato diseases have received considerable attention, a malnutrition disease having been described by Edson and Schreiner, notes given by Durrell on curly dwarf in Iowa, mosaic symptoms described by Melhus, and a form of necrosis reported by Jones and Bailey. Morse claims that the blackleg disease of potatoes is due to *Bacillus atrosepticus*. Rhizoctonia diseases in Maine were described by Ramsey and Rosenbaum and Shapovalov. McClintock believes that the powdery scab of potatoes will not become an economic factor in Virginia. Erwin reports an average increase of 20 bu. per acre for five years due to spraying potatoes with Bordeaux mixture. Sherbakoff has described a rot of tomatoes caused by *Phytophthora terrestria*. A bacterial disease of the leaves and stems of lettuce from South Carolina was reported upon by Nellia A. Brown. At least 15 per cent. of the peanuts in certain areas near Norfolk, Va., were destroyed by *Sclerotium rolfsii*, according to McClintock. A Fusarium wilt of soy beans in North Carolina is reported by Cromwell. A new disease which affects all native varieties of cotton in Poona, India, is reported. Boncquet claims a bacillus is associated with the curly-top disease of sugar beets.

Control of Plant Diseases.—Levin reports the control of the bacterial disease of lettuce by spraying with dilute formalin. Haskell has devised a method of spraying seed grain with formalin which is said to offer advantages over the dipping methods. Vermorel and Dantony have called attention to the superiority of alkaline Bordeaux mixture over acid or neutral mixtures. The addition of 0.1 per cent. iron sulphate to copper spray mixtures is claimed to increase the efficiency of the spray solution on grapes. Gladwin and Reddick report excellent results with powdered lime and sulphur used for the control of grape powdery mildew. Stewart found sulphur applied in dry form to nursery stock prevented injury by leaf fungi.

ECONOMIC ENTOMOLOGY

WILLIAM A. HOOKER

Insect Quarantine and Eradication.—Unusual organized efforts are being made by state and Federal entomologists with a view to preventing much of the $700,000,000 annual loss, as estimated by the Secretary of Agriculture in 1915, caused by insect pests. With this end in view two new divisions in the Federal Bureau of Entomology, the Stored Products Insects and the Entomological Extension divisions, were created by the Secretary of Agriculture.

The invasion of the United States by the pink bollworm of cotton, an infestation of which was found in fields in Texas, and its supposed eradication, was the most noteworthy event in the entomological field. Several new foreign insect pests made their appearance and became of importance, including the new peach moth, *Laspeyresia molesta*, which was introduced into several states and the District of Columbia on the flowering cherry from Japan; a new earwig which became established in the vicinity of Newport, R. I.; and the Japanese leaf-feeding beetle, *Popillia japonica*, introduced into New Jersey and causing considerable injury to grapes and roses in one locality. In order that the inspectors of the Federal Horticultural Board might be aided in their recognition of such foreign insect pests, a "Manual of Dangerous Insects Likely to be Introduced" was prepared.

Insect Outbreaks.—Among the worst outbreaks of insects during the year were those of plant lice, particularly the potato-plant louse; a weevil and wireworm which caused complete loss of the rice crop over 40,000 acres in Matagorda County, Texas; cutworms, which were unusually abundant, especially in the Southwest; and grasshoppers throughout the western United States.

Pink Bollworm of Cotton.—This pest, by far our worst foreign insect enemy, appeared in Mexico in 1916 in cotton fields of the Laguna District (*A. Y. B.*, 1916, p. 467). Quarantine established against it by the Federal Horticultural Board was vigorously enforced during the year, every effort being made by Federal and state entomologists to prevent its introduction into the United States. It appears, however, that the larvæ had been introduced in a carload of cotton seed shipped from Mexico prior to the establishment of the quarantine in November, 1916, to a cotton-oil mill at Hearne in central Texas, for on Sept. 12, 1917, a pink bollworm was found in a cotton field adjoining the oil mill. The Federal Horticultural Board at once commenced eradication work. For control work with this pest Congress appropriated $250,000, and the establishment of a zone or zones free of cotton culture on or near the border of any state or state adjacent to Mexico, if found necessary, in order to prevent the pest from gaining a foothold, was authorized. All fields adjacent to the oil mill at Hearne were thoroughly cleaned up with the aid of 25 entomological inspectors and over 400 laborers. In the course of this work all cotton, both root and branch, was destroyed by pulling and burning, and the land burned over with a burner such as is used in softening asphalt in repairing pavement. Similar measures, so far as necessary, were taken in the vicinity of other mills where seed had been introduced prior to November, 1916. Every precaution was taken to prevent the establishment of the pest, including the shipping abroad of the lint and prompt crushing of the seed at the mills. Funds for payment for destroyed cotton were raised by public subscription by planters and others at Hearne. Its occurrence in several other localities was reported late in the year and further steps were taken to prevent its becoming established.

Pink-and-Green Potato Aphid.—The potato-plant louse, which has never before appeared in destructive numbers outside of Aroostook County, Maine, was the source of great loss to potato and tomato growers in localities as far west as Missouri. As an illustration of the damage, mention may be made of a farmer in Hampshire County, Mass., who suffered the complete loss of an eight-acre field of potatoes upon which there had been an outlay of over $800 in cash in addition to his own labor; and of a farmer in Hamilton County, O., who received a return of but $100 from a field of tomatoes which should have yielded a return of $900.

A New Peach Pest.—A new moth closely related to the codling moth and described as *Laspeyresia molesta* has been introduced into the United States, probably from Japan, and has already become a serious enemy of the peach. Since it was first observed in the District of Columbia in 1916, where the infestation is quite general, it has been found as far north as Connecticut, attacking the terminal twigs of the peach, plum and cherry, stunting their growth, and also infesting the fruit of the peach. Its attacks on the terminal twigs of the peach cause a flow of gum and pushing out of new twigs from lateral buds. Preliminary studies of the pest were reported by Quaintance and Wood, who conclude that because of its habits spraying will prove ineffectual.

Pear Thrips.—It has been shown by Williams that the pear thrips is no other than *Tæniothrips inconsequens*, a species known to have occurred in England for nearly one hundred years. It does not, however, cause much damage in the Old World, whence it was probably introduced into California and other states in soil which was attached to the roots of fruit trees when transplanted.

Cotton Boll Weevil.—The boll weevil was greatly reduced in the spring and early summer by unfavorable weather conditions, and as a result it caused the smallest damage on record, averaging not more than five per cent. over large sections. The only severe damage caused was in the upper Mississippi delta, southern Georgia, and Florida. In its dispersion in the fall it reached South Carolina and was found in Beaufort and Jasper Counties.

Alfalfa Weevil.—The alfalfa weevil spread during the year to the southeast into western Colorado and extended northward in Idaho.

Insect Control.—Experiments by Metcalf of the North Carolina Experiment Station showed that cowpeas can be saved from the bean weevil and the cowpea weevil by storing in air-slaked lime, and he recommends its use in the proportion of one part of peas to two parts of lime by weight. Hinds of the Alabama Station reported experiments in which dry cowpeas that had been submerged in liquid carbon bisulphide from one minute to 1,000 hours gave an absolutely perfect germination. Work with the radish maggot by Parrott at the New York State Station has shown that satisfactory protection of radishes may be obtained by screening the beds with cheesecloth; when the screen is of sufficiently fine mesh the injury by flea beetles is also reduced to a considerable extent. Matheson of the Cornell Experiment Station found that the serious injury to young trees in the nursery by the poplar and willow borer (*Cryptorhynchus lapathi*) can be largely eliminated through the application of carbolineum avenarius to the trunks in the latter part of March at a cost averaging 0.2 cent per tree. Work by Bishopp and Wood of the Federal Bureau of Entomology has shown that sodium fluoride, used so satisfactorily in the control of roaches, when dusted on fowls will readily kill both old and young chicken lice, and that it is the most satisfactory means of control. It was also found by Hall of Detroit to destroy Trichodectes lice which infest the horse. A trap to be used as a substitute for the banding method for destroying the codling moth was described by Siegler of the Federal Bureau of Entomology, who found it to be very effective.

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AGRICULTURAL LEGISLATION

H. L. KNIGHT

Federal Legislation: War Legislation.—The importance of American agriculture as a factor in the war was reflected in the legislation of the year.

Unusual efforts were made as war measures to stimulate production and regulate distribution of farm products, and to accomplish this the powers and functions of the Government were radically extended in several directions.

Agriculture was directly interested in many of the provisions of the Food Control Act signed on Aug. 10, designed to assure an adequate supply and equitable distribution of foods, feeds and fuel, and of the fertilizers, machinery, and other equipment required for their production. Among the general provisions of this Act which apply to farmers is the prohibition of the willful destruction or waste of necessaries and conspiracy to limit their production. Hoarding is also forbidden, but this does not include the storage of their own products by farmers, gardeners, or their coöperative organizations. The President was authorized to fix a minimum guaranteed price for wheat when deemed necessary, and a price of not less than two dollars per bushel for No. 1 Northern Spring wheat or its equivalent at the principal interior markets was definitely established for the crop of 1918 until May 1, 1919. An appropriation of $10,000,000 was also included for purchases of nitrate of soda for sale at cost to increase agricultural production during 1917 and 1918. The Act as a whole carries an appropriation of $162,500,000. (See also *Agriculture, supra;* and I, *The Sixty-fifth Congress.*)

The Food Production Act, likewise signed on August 10, was designed to extend the functions and enlarge the resources of the U. S. Department of Agriculture during the war. It thus supplemented the annual Appropriation Act for the support of the Department. (See also *Agriculture, supra.*)

Agriculture was specifically included among the industries from which persons "found necessary to the maintenance of the military establishment or effective operation of the military forces or the maintenance of the national interest during the emergency" might be exempted from military service under the Selective Draft Act (see I, the *Sixty-fifth Congress*). In the administration of this Act many exemptions were made of individuals under this provision, although exclusion of farmers as a class was not undertaken in raising the first levy of men.

Public Lands.—Under the Stock-raising Homestead Act, signed on Dec. 29, 1916, certain public lands, the surface of which is chiefly valuable for grazing and raising forage crops, which do not contain merchantable timber, and which are not susceptible of irrigation, may be designated by the Secretary of the Interior as stock-raising lands, and opened to entry in tracts as large as 640 acres. Amendments were also made to the Enlarged Homestead Act of 1910 and to the Reclamation Act. (See also IX, *Public Lands*, and *Reclamation.*)

Federal Aid Vocational Education Act.—This measure, which had been pending in Congress in various forms since 1907, became law on Feb. 23. It provides for an ultimate Federal expenditure of about $7,367,000 per year, chiefly for grants to the states for the promotion of secondary instruction in agricultural, trade, home-economics, and industrial subjects. About one-third of this amount is for work in agriculture, including the payment of salaries of teachers, supervisors, and directors of agricultural subjects, and the preparation of these officials. The agricultural instruction given must be of sub-collegiate grade and designed to meet the needs of persons over 14 years of age as regards the work of the farm or the farm home. The state or local community must provide the necessary plant and equipment, including a farm for use in at least six months of supervised practice in agriculture each year, contribute one-half the expenditure for salaries of the agricultural instruction staff, and bear the entire cost of all supplementary instruction. (See also XIV, *Vocational Education and Guidance;* and XXX, *Education.*)

State Legislation: War Legislation.—The legislatures of most of the states were in regular or special session and the amount of agricultural legislation was considerable, much of it relating to the war. Comprehensive emergency food laws were enacted in New York and in Porto Rico, each with an appropriation of $1,-000,000. The New York law was somewhat analogous to the Federal Food Control Act (see *supra*) and contained a provision for operating public markets, while in Porto Rico the food commission was also empowered to plant and grow products. California directed its state Council of Defense to develop the food resources of the state, and New Jersey proclaimed a special food-planting day and week. A Connecticut law allowed school credit under certain conditions to high-school students volunteering for farm work. In Massachusetts towns and cities were given power to cultivate private lands on application of their owners, and restrictions on Sunday gardening and similar farm work were suspended. New Hampshire increased the penalties against damage or theft of farm crops or gardens during the war. Connecticut also strengthened its trespass laws, and there was a general tendency throughout the country to enforce existing legislation for this purpose more stringently.

Agricultural Credit and Coöperation.—Laws providing for state loans on farm lands were enacted in Montana and South Dakota, and a previous law became effective in Oregon. In Minnesota counties were allowed to make loans to farmers to buy seed, and towns to furnish dynamite to settlers for stump removal. Oklahoma, Tennessee and Texas regulated the operations of farmers' coöperative associations. In North Carolina "time prices" for supplies advanced during the crop season were restricted to 10 per cent. over cash prices.

Marketing Farm Products.—State bureaus of markets were established in New Hampshire, Oregon and West Virginia, market commissions in California and Oklahoma, and a state commissioner of markets in Washington, while the New York law was considerably amended. Counties in Montana, North Dakota and Tennessee, and municipalities in Connecticut and New Jersey were authorized to operate public markets. In Arizona and Washington local ordinances tending to hamper producers in sales were forbidden. Price discrimination and other practices were further regulated in Minnesota, North Dakota and Utah. Cotton and grain exchanges were regulated in Oklahoma.

Grading, Inspection, and Other Regulatory Laws.—Systems of grain grading and warehouse inspection were provided in Minnesota, Montana, North Dakota, Oregon and South Dakota. Provision was made for establishing standard grades on farm products in Idaho, on fruits and vegetables in Texas, and on apples in California, Delaware, Massachusetts, New Hampshire and West Virginia. Standard packages were prescribed in California, Iowa and Oregon for various fresh fruits and vegetables. The sale of immature or frozen citrus fruit was restricted in California, and likewise that of infested or diseased fruit in Oregon.

The inspection laws with reference to nurseries and orchards were amended in Arkansas, California, Colorado, Minnesota, Nevada, Oregon and West Virginia. Additional steps were taken to combat plant diseases and insect pests in Connecticut, Massachusetts, Nebraska, North Dakota, Ohio, South Dakota and Utah, and diseases of bees in Ohio, Oregon and West Virginia.

New seed laws were enacted in Colorado, Nebraska, North Carolina and South Dakota, and amendments in Tennessee and Wyoming. Hay and straw inspection was undertaken in Kansas and Oregon, and cantaloup inspection in Colorado. Iowa adopted new insecticide- and fungicide-inspection laws, and those of Colorado and Ohio were amended.

Amendments were made to the laws governing fertilizers in Delaware, North Carolina, Ohio and West Virginia, lime in Ohio, feeding stuffs in Massachusetts, Missouri, Ohio, Texas and Wyoming, meat inspection in California, Oregon and Rhode Island, and testing of dairy apparatus in Connecticut, North Dakota, Oregon and Tennessee. Provision was made for inspecting serums for use in animal diseases in Nebraska and Oklahoma, and for licensing creameries, cheese factories, etc., in Utah and North Dakota.

Increased sanitary requirements affecting dairying were adopted in California, Connecticut, Massachusetts, Missouri, Nevada, Oregon, Rhode Island and Wyoming. Pasteurization was required in California, Oregon and Wyoming of milk from cows not subjected to the tuberculin test; and in New Jersey of dairy by-products. In New Hampshire the sale of standardized milk was legalized, and in New Jersey the bonding of dealers was required.

New stallion registration laws were enacted in Missouri, Oregon, Washington, West Virginia and Wyoming. Scrub stallions were forbidden to run at large on the open range in Arizona, and a similar provision was made as to bulls in Washington.

Increased provision was made for combating hog cholera in Connecticut, Kansas, New Mexico and North Carolina. New Jersey amended its laws as to bovine tuberculosis, and Montana, Missouri, Nebraska, Ohio, Texas, Utah and Wyoming increased their requirements as to animal diseases in general.

Agricultural Education.—Action under the Federal Aid Vocational Education Act (see *supra*) was taken in all states except Idaho, Illinois, Maryland, North Dakota and Rhode Island. In North Carolina instruction in agriculture and home economics was made compulsory in all public schools outside of the larger cities. Schools receiving state aid for agriculture in South Carolina were required to maintain small farms, and additional provision for farm and school project work was made in California.

Miscellaneous.—The formation of agricultural development districts was authorized in North Carolina, and in Minnesota corporations were empowered to reclaim and develop timber and brush land for agriculture. The Torrens system of land registration was adopted in North Dakota, South Dakota and Utah, registration of farm names provided in Utah, and registration of alfalfa seed farms in South Dakota. Oregon established a state lime plant, and arranged for leasing the kelp fields along its coast for potash production. Iowa, Ohio and New York amended their dog laws to give increased protection in sheep raising. Montana regulated hail insurance. Texas appropriated $30,000 for a campaign to promote rural health and sanitation.

HORTICULTURE

E. J. Glasson

Crop Conditions.—The prospects for an abundant fruit production in 1917 were cut down early in the year by frost and dry weather. The most serious shortages occurred in Florida, where less than half of the average citrus and pineapple crops were produced. In northern and central Florida citrus fruits were frozen on the trees and young trees were killed to the ground. The peach crop was more or less seriously injured in Texas, Arkansas, the Great Lakes region, and in part of the Ohio Valley. In California a heat wave of unprecedented severity in June destroyed a large percentage of the 1918 citrus crop, especially navel oranges. The apple crop was rather generally short.

Stimulated by the warning, encouragement, and assistance of various government, state, and other agricultural agencies, both amateur and commercial vegetable growers responded to the call for larger food crops to meet conditions brought about by the war. Frost and dry weather did much damage in the early vegetable sections and the main planting season was delayed by cool weather. Such a large acreage of vegetables was planted, however, that an abundant supply of vegetables was produced. The demand for canned and dried fruit and vegetable products was extremely active, with an upward trend in prices both to the producer and consumer. Notwithstanding an abundant supply of vegetables in the fall, the high prices of the earlier months still prevailed, as it was found difficult to transport these crops to the markets where they were most needed.

The commercial apple crop was estimated at about 21,500,000 bbl., as compared with 25,500,000 bbl. in 1916. As the result of many new plantings coming into bearing, California shipped a banner crop of 54,300 cars of citrus fruits and 24,000 cars of deciduous fruits, as compared with 45,234 cars of citrus fruits and 18,000 cars of deciduous fruits in 1916. The total production of peaches was about 42,500,000 bu. and of pears about 11,500,000 bu., as compared with 37,000,000 bu. of peaches and 10,377,000 bu. of pears in 1916. The white-potato crop was estimated at 439,500,000 bu., and sweet-potato crop at 85,000,000 bu. as compared with 285,500,000 bu. of white potatoes and 71,000,000 bu. of sweet potatoes in 1916. The fall onion crop amounted to about 13,500,000 bu. as compared with 7,800,000 bu. in 1916. The bean crop was estimated at nearly 16,000,000 bu., as compared with 8,846,000 bu. in 1916. About 500,000 tons of cabbage were produced, as compared with 252,000 tons in 1916. The 1916 pack of tomatoes, corn, and peas amounted to 13,142,000, 9,130,000 and 6,686,000 cases, respectively. In 1916 Hawaii packed 2,609,483 cases of pineapples.

Foreign Trade.—In the fiscal year ended June 30, 1917, the United States exported fruits, vegetables, and nuts worth $61,684,907, as compared with $52,917,640 in 1916. The amount imported was $87,331,846 worth, as compared with $55,257,800 in 1916. The export figures are: fruits, $37,653,160; vegetables, $22,290,710; nuts, $1,741,037. The import figures are: fruits, $25,315,943; vegetables, $29,150,889; nuts, $32,865,014. The somewhat improved shipping facilities were offset by the short crop year and the active home demand in 1916-17; hence, the increased export figures were largely due to high prices. The most striking increased shipments were: 22,413,297 bu. of peanuts, as compared with 8,669,430 bu. in 1916; 2,164,943 bu. of dried beans and peas, as compared with 1,760,383 bu. in 1916; and $4,765,136 worth of canned vegetables as compared with $2,529,694 worth in 1916. Exports of white potatoes decreased from 4,017,760 bu. in 1916 to 2,489,001 in 1917. A reduced quantity of fruit, notably, bananas, currants and dates, was imported in 1917 at higher prices. Imports of beans, peas, lentils, onions and potatoes increased from 2,628,484 bu. in 1916 to 9,747,987 bu. in 1917. Imports of unprepared cocoanut meat increased from 110,077,844 lb. in 1916 to 247,036,099 lb. in 1917. Shelled peanuts in the amount of 27,180,748 lb. were imported in 1917, as compared with 19,392,832 lb. in 1916. In connection with these increased imports of coconuts and peanuts attention may be called to the fact that an active demand has been recently created in this country for nut margarin, a substitute for butter prepared largely from coconut and peanut oil. Exports of nursery stock increased from $203,061 in 1916 to $219,618 in 1917. Nursery stock in the amount of $3,955,709 was imported in 1917, as compared with $3,686,559 worth in 1916.

War Gardens.—As a part of the concerted effort to increase the food supply in the United States in 1917, it is conservatively estimated that the gardens of the country were trebled in area. The home gardens in practically every city, suburb and village were enlarged, and thousands of acres of idle land were utilized by individuals, communities and corporations in the production not only of perishable vegetables but of staple crops such as corn, potatoes, onions, cabbage, turnips, etc. The extension services of the U. S. Department of Agriculture, as well as of the various state departments, the agricultural press, the general press, and other agencies actively coöperated in furnishing assistance and information dealing both with the culture and conservation of vegetables. An enormous quantity of vegetables was also canned and dried in homes where no garden space was available. In many sections the season was unfavorable, especially for amateur gardening, but the net result was an important addition to the country's supply of fresh, dried, and canned vegetables, thereby releasing much food to our own army and those of our allies.

Horticultural Societies.—At a special meeting of the American Pomological Society, held in Washington, D. C., on Nov. 17, 1916, representatives of various horticultural societies organized the National Congress of Horticulture, the membership to comprise the various horticultural societies of the United States. The Congress is to meet annually for the discussion of interstate, national and international problems dealing with the horticultural industries of the country. The voting membership will consist of delegates from each affiliated society. A number of organizations enrolled at the first meeting and a much larger number secured membership during 1917. The second annual meeting of the congress was held in Boston on Nov. 1, in session with the American Pomological Society.

At the annual meeting of the Society for Horticultural Science, held at New York, in December, 1916, the name of the society was changed to the American Society for Horticultural Science.

Necrology.—Parker Earle, a pioneer in the development of the refrigerator-car service for perishable fruits, for 20 years president of the American Pomological Society, and director of the Department of Horticulture of the New Orleans Exposition in 1884-5, died on Jan. 12, in his eighty-fifth year. Arnold V. Stubenrauch, professor of pomology in the University of California, for ten years pomologist in the U. S. Department of Agriculture, and one of the highest authorities in horticultural investigations relating to the transportation of fruits, died on Feb. 12 in his forty-sixth year. John Howard Hale, nurseryman, lecturer and writer on general horticultural subjects, for four years president of the American Pomological Society, and leading peach orchardist in the United States, died on Oct. 11 in his sixty-fourth year.

FORESTRY

E. J. Glasson

Fire Protection.—The fire situation in the big lumber regions of the Northwest and British Columbia was more serious in 1917 than in many years past. The whole organization of the Forest Service in the affected districts was devoted exclusively to fire fighting. In accordance with a prearranged plan, men from forests where there were no fires were relieving the rangers who had been worn out by their long exertion. In Montana and northern Idaho 2,000 men were fighting fires. In Oregon and Washington valuable timber intended to furnish airplane stock for the fighting forces of the United States and its allies was threatened by the flames, and logging operations on this class of material were seriously interfered with. Numerous fires were reported as the result of incendiarism. In order to keep as many persons as possible out of the danger zone the governor of Oregon postponed the opening of the hunting season in that state. The encouraging feature of the protective work as a whole was that the well organized forest fighting force was busy preventing numerous small fires from destroying the forests rather than actually fighting big fires within the forests. The greatest loss was in privately owned forests where the protective system was not so well developed.

During the calendar year 1916 forest officers extinguished 5,655 fires in the national forests. Of these, 2,634, or 47 per cent., burned over less than ¼ acre; 1,499, or 26 per cent., were extinguished before they had burned over 10 acres; and 1,522 burned over greater areas. Since the national forests have been under the supervision of the Forest Service, over 25,000 miles of trail, 23,000 miles of telephone, 860 miles of firebreaks, and 360 lookout stations have been built, chiefly to aid in protecting them against fire.

Forest Regiments for France.—The first forestry regiment for service in France was organized in Canada previous to the entry of the United States into the war. During the year 56 companies of the Canadian forestry corps were operating in France. They were equipped with sawmill machinery and tools, and all kinds of lumber were manufactured. Timber operations were being conducted within range of German guns. The U. S. forest regiment, known as the Tenth Reserve Engineers (Forest), was equipped in a similar manner and landed in France some time in September. A second regiment of forest engineers was under training at the close of the year. These regiments are officered for most part by forestry experts from the government, state and provincial services, and lumbering is to be conducted as far as practicable with due respect for future growth of the woodlands. In addition to supplying the war needs, lumber will be furnished for the restoration of the stricken parts of France and Belgium.

Forest Legislation.—Recent acts of Congress prohibit any additions by the President to the national forest areas in Washington, Oregon, California, Idaho, Montana and Wyoming. Another act, passed upon a petition of the people of the state, permits additions to be made to the national forests of Colorado. Minnesota provided for additional state forests and for a survey of public lands to determine lands suitable for reforesting with timber stock for paper manufacture. Nebraska established a state forestation commission, and provided that counties, cities and villages may acquire and operate adjoining forest-reserve tracts. California established a state forest nursery. Oregon made more stringent laws relative to setting fires in clearing up land, etc., and Tennessee provided that it shall be a felony to set fire wilfully, maliciously or wantonly to any woods in the state. In Porto Rico the commissioner of agriculture was instructed to obtain options on land for territorial forest reserves.

National Forests.—Statistics corrected to June 30, 1917, show a total of 152 national forests in the United States, with a net area, including Alaska and Porto Rico, of 155,166,619 acres. In addition, 947,198 acres have been acquired by purchase in the White Mountain and southern Appalachian regions. During the same fiscal year the national forests receipts from all sources were $3,457,028.41, as compared with $2,823,540.71 in 1916. Of the revenues in 1917, timber sales yielded $1,692,515.21, grazing, $1,549,794.76, and special uses, $214,718.44. Including appropriations under the Federal Aid Road Act, the total amount for roads, trails and other improvements on the national forests during the fiscal year 1918 is $1,926,530.84. The work of classifying and opening to homestead entry such lands in the national forests as are chiefly valuable for agriculture is progressing rapidly. Over seventy million acres have been covered by field examinations and the final reports acted upon. President Wilson has thus far added 921,046 acres and eliminated 11,912,473 acres.

Forest Policy of the States.—The movement for national forestry has been followed by a widespread development of state forest activities. Thirty-two states now have forest departments, 24 employ professionally trained foresters, and practically all show recognition of the need for a state forest policy. More than 13 million acres of private and state-owned land are protected in coöperation with the Federal Government under the Weeks law at an average cost of 0.75 cent per acre. Private lands are also protected in many states under a fire-warden system. Altogether more than 100 million acres are fairly well protected against forest fires by combined agencies at an average cost of less than two cents per acre. New York has a state-owned forest reserve of 1,825,882 acres in the Adirondack and Catskill Mountains under fire protection but not under forest management, which the state constitution forbids. Pennsylvania has more than 1,000,000 acres of state-owned forests and practices forestry on them. Minnesota, Wisconsin and Michigan have large holdings of state forests. Minnesota has approximately 1,000,000 acres of school lands which are to be retained for state school forests, besides 43,000 acres now in state forests. Wisconsin has 400,000 acres reserved, and Michigan 589,000, of which 312,000 are used for exchange to add to the 277,000 acres permanently reserved in several large blocks in different parts of the state. South Dakota has 75,000 acres of state forests in the Black Hills. New Jersey has 13,720 acres, and New Hampshire, Vermont, California, Connecticut, Massachusetts, Indiana and Maryland from 2,000 to 9,000 acres each. Fourteen states distribute planting material for reforestation purposes. Pennsylvania offered 2,000,000 forestry seedlings for free distribution within the state in 1917.

Wood Preservation.—According to the report of the American Wood Preservers' Association for 1916, the timber treating industry is slowly regaining its before-the-war status (See *A. Y. B.*, 1916, p. 475). In 1916 a total of 150,522,982 cu. ft. of wood was treated by the 117 treating plants which were active during the year. This is 6.9 per cent. more than in 1915.

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FISHERIES

HUGH M. SMITH

General Conditions.—During 1917 the American fisheries assumed a more prominent status than ever before attained, owing to extension of operations, increased prices received for the catch, and exploitation of hitherto unutilized products. Statistics for all branches have not been collected, but the data in hand justify the estimate that the value of American fishery products in 1917 as first placed on the markets was $112,000,000, about 25 per cent. more than ever before. Peculiar economic conditions imposed by the war have resulted in greater attention to both staple and neglected aquatic food resources, and a permanent effect of the world crisis may be a more prominent place of such foods in the American dietary.

New England Vessel Fisheries.—The fishing fleet making headquarters at Boston, Gloucester and Portland numbered 512 sail, steam and gasoline-screw vessels in 1916, and landed 3,089 fares at Boston, 2,864 at Gloucester, and 2,992 at Portland, total, 8,945. The catch was as follows: Boston, 98,331,000 lb., $3,702,365; Gloucester, 66,680,550 lb., $2,159,895; Portland, 20,812,840 lb., $521,645; total, 185,824,430 lb., $6,383,905. The haddock has assumed first place in these fisheries as regards both quantity and value (60,555,790 lb., $1,761,675), displacing the cod (43,622,560 lb., $1,556,880). The mackerel ranks next (15,906,350 lb., $1,049,290), followed by halibut (3,458,765 lb., $385,585), pollock (15,603,630 lb., $383,615), and hake (13,172,300 lb., $337,240). The principal grounds on which these fisheries depend for their catch are those lying off the New England coast. In 1916 over 72 per cent. of both quantity and value of products came from grounds lying west of long. 66° W., about 18 per cent. from grounds off the Canadian provinces, and less than 10 per cent. from grounds off Newfoundland.

Shrimp Industry.—The shrimp industry is one of the most important branches of the fisheries in the South Atlantic and Gulf states. A canvass in 1917 revealed a surprising growth in recent years. The aggregate catch in 1916 was 43,942,000 lb., valued at $758,620; the investment was $2,484,625, and 9,235 persons were employed. The product had increased 137 per cent. in quantity and 73 per cent. in value compared with 1908. Louisiana is the center of the industry, with 41 per cent. of the catch; Florida ranks second, followed by Mississippi, Georgia, North Carolina, Texas, South Carolina and Alabama. On Atlantic coast the bulk of the product is caught with otter-trawls, and on Gulf coast with haul seines. Part of the output is marketed in a raw condition, part air-dried after cooking, and part dry cooked, but most is canned. The canneries, numbering 35, are in all states except Texas. The canned product in

1916 was 448,440 cases holding 24 or 48 cans each, and having a value of $1,436,850.

Pacific Coast Fisheries.—A canvass completed in 1917 shows that in calendar year 1915 the fisheries of Pacific Coast states as a whole were more extensive and valuable than in any previous year for which statistics are available. The number of persons engaged in the industry was 28,936 (14,609 in Washington, 5,870 in Oregon, 8,457 in California); the capital invested was $24,025,175 ($14,133,910 in Washington, $4,064,150 in Oregon, $5,827,115 in California); the catch aggregated 286,204,560 lb. (158,983,180 lb. in Washington, 34,707,625 lb. in Oregon, 92,513,455 lb. in California); the value of the output to the producers was $9,300,675 ($5,317,080 in Washington, $1,495,495 in Oregon, $2,488,100 in California).

Vessels employed in fishing and transporting supplies and men to remote stations and bringing back the prepared products numbered 739; tonnage, 17,299; value with outfits, $4,132,775. The most important apparatus of capture was 803 seines, $343,180; 10,863 gill nets, $1,309,895; 483 pound nets, $1,122,803; 29 wheels, $108,800 (confined to the Columbia River).

The leading products were: tuna or albacore, 21,049,190 lb., $316,105; cod, 10,454,125 lb., $342,685; halibut, 40,825,875 lb., $2,050,710; salmons, 131,128,935 lb., $4,089,865; shad (introduced from Atlantic coast), 7,440,930 lb., $73,215; striped bass (introduced from Atlantic coast), 1,784,450 lb., $146,930; eastern oysters, 91,540 bu., $305,600; native oysters, 69,310 bu., $266,155; crabs, $196,715; spiny lobsters, $130,120; whale products, $141,440. The pack of canned salmon was 1,961,026 cases (of 48 1-lb. cans), valued at $9,298,566. Of tuna, the next important canned fish, 258,427 cases, valued at $1,517,858, were packed, all in California. The value of other canned products was $858,907.

Compared with 1904, when the Bureau of Fisheries made a complete canvass of these fisheries, the number of persons engaged had increased 9,278, or 47 per cent.; the capital invested increased $11,185,225, or 87 per cent.; the output increased 117,604,880 lb., or 70 per cent.; and value of the catch increased $2,619,805, or 39 per cent.

Alaskan Fisheries.—The fisheries of the territory of Alaska in 1916 were more extensive than ever before, and all branches except whaling and halibut fishing showed an increase over 1915. The industry gave employment to 23,994 persons, had invested $39,569,610, and yielded products worth $26,156,560, an increase of $5,157,000 over the preceding year. The salmon industry represented 88 per cent. of the total investment and 92 per cent. of the total value of output. One hundred salmon canneries were in operation, and the pack reached 4,900,000 cases (of 48 1-lb. cans), having a market value of $23,270,000. The yield of other important fisheries was: halibut, $680,000, cod, $518,800, herring, $418,000, and whale, $363,700.

The Alaska Seal Industry.—The five-year close time imposed by Congress expired on Aug. 24, 1917. Killing of seals on Pribilof Islands for commercial purposes will now be resumed and each of the Governments of Great Britain and Japan will be entitled to 15 per cent. of skins taken each year. Surplus male seals taken in 1917, chiefly for food purposes of natives, numbered 8,000. Sales of dyed and dressed sealskins for account of Government have continued in St. Louis. The Alaskan seal herd in 1917 comprised 468,692 animals of all ages, an increase of 51,411, or 12.3 per cent., over 1916; the breeding females numbered 128,024, and the new-born pups the same, while the surplus males of all ages from two years upward numbered over 102,000. The Government is taking steps to utilize for first time the by-products of sealing—oil, meat, bones, gullets, etc.

Utilization of Neglected Aquatic Products.—The tilefish, for which a fishery was established through the agency of the Federal Government in October, 1915, has continued to be taken regularly for the New York and Boston markets. The catch to June 30, 1916, was upward of 4,388,500 lb. for which the fishermen received over $210,000; during the fiscal year 1917 the landings aggregated 11,641,500 lb., valued at $477,730. The government campaign to make an asset out of the spiny dogfish, one of the most destructive and neglected fishes of both Atlantic and Pacific coasts, has made noteworthy progress. Following the adoption for trade purposes of the distinctive name of grayfish, the canning of this new food has begun, the demand has outrun the supply, and the fishermen are finding a market for many million pounds annually. Although canned grayfish was unknown to the trade and the public prior to October, 1916, in six months it was on sale in 30 states. Other fishes whose more general consumption has been made the subject of special propaganda by the Bureau of Fisheries are the black cod or sablefish of the Pacific coast, the whiting of the Atlantic coast, and the burbot and bowfin of the interior waters. A movement initiated in 1917 has brought into rather common use as food the meat of whales, and the indications are that whale meat will have henceforth a regular and growing place in our dietary.

The scarcity and high price of the ordinary hides used in the manufacture of leather has brought into prominence the availability of fish and cetacean skins for this purpose. Congress by act approved June 12, appropriated $10,000 to enable Bureau of Fisheries, in coöperation with Bureau of Standards, to develop new sources of leather from aquatic animals. The work has progressed to a point where many tanners have become satisfied of the value of porpoise, shark and other fish skins, and are offering fishermen inducements to preserve them.

Fish Culture.—Conspicuous success and progress have characterized the fish-cultural operations of the U. S. Bureau of Fisheries. The output of food and game fishes was 5,158,963,000, the largest in the history of the service, while the cost of production per million, namely $114.46, was lower than ever before. Of the 50 or more species regularly handled at the government hatcheries, those whose artificial propagation is most extensive are shad, whitefish, Pacific salmons, lake trout, brook trout, pike perch, yellow perch, striped bass, cod, pollock, winter flounder and lobster. In the fiscal year 1917, 55 hatcheries, 19 sub-hatcheries and 74 egg-collecting stations were operated, and the hatchery product reached every state and Alaska. Artificial propagation of fresh-water mussels, on which depends the pearl-button industry, was conducted in the Mississippi Valley on a very extensive scale. Five species of pearly mussels to the number of 252,500,000 were inoculated on fishes that are their natural hosts, and the fishes were liberated in suitable waters. This work centers at the fisheries biological station at Fairport, Iowa. The cost of production of young mussels in 1917 was 2.72 cents per 1,000.

STATISTICS OF AGRICULTURE

WORLD'S PRODUCTION OF PRINCIPAL CROPS, 1904–1915

(*Yearbook of the Department of Agriculture*)

	1904	1909	1914	1915
Barley (bu.)	1,175,784,000	1,458,263,000	1,463,289,000	1,503,272,000
Corn (bu.)	3,109,252,000	3,563,226,000	3,877,913,000	4,194,586,000
Cotton (bales)	21,005,175	20,679,334	....	....
Flaxseed (bu.)	107,743,000	100,820,000	....	....
Hops (lb.)	178,802,000	128,173,000	[1] 234,826,000	....
Oats (bu.)	3,611,302,000	4,312,882,000	4,034,857,000	4,416,578,000
Potatoes (bu.)	4,298,049,000	5,595,567,000	....	....
Rice (lb.)	115,735,800,000	127,700,000,000	....	....
Rye (bu.)	1,742,112,000	1,747,123,000	1,596,882,000	1,711,158,000
Sugar (short tons)	13,744,000	16,004,000	20,704,000	20,385,000
Tobacco (lb.)	2,146,641,000	2,742,500,000	....	....
Wheat (bu.)	3,163,542,000	3,581,519,000	3,585,916,000	4,094,480,000

[1] Preliminary.

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES, 1904–1916

(*Yearbook of the Department of Agriculture*)

	1904 Production (000 omitted)	1909 Production (000 omitted)	1914 (000 omitted)		1915 (000 omitted)		1916 (000 omitted)	
			Acres	Production	Acres	Production	Acres	Production
BARLEY (bu.):								
Algeria	37,106	31,511	3,131	35,785	2,703	39,866	......	......
Austria-Hungary	119,451	153,582	......	128,663	......	119,124	......	......
Canada	43,872	55,398	1,496	36,201	1,509	53,331	1,329	41,318
France	38,827	46,144	1,780	42,719	1,575	30,963	1,547	37,778
Germany	135,409	160,551	3,909	144,125	4,002	114,077	[2]	[2]
Japan	80,000	87,219	3,294	85,775	3,239	100,891	3,109	99,822
Russia (European)	343,981	464,734	29,755	383,572	28,498	380,821	......	......
Spain	60,000	81,579	3,404	72,272	3,786	82,763	4,035	84,372
United Kingdom	64,474	71,116	1,870	66,637	1,524	48,376	1,652	54,934
United States	139,749	173,321	7,565	194,953	7,148	228,851	7,674	180,927
CORN (bu.):								
Argentina	175,189	177,155	10,260	263,135	10,386	338,235	9,930	161,133
Austria-Hungary	89,757	210,241	[2]	215,079	[2]	222,550	......	......
Bulgaria	12,758	20,472	1,571	30,901	[2]	35,000	[2]	[2]
Canada	20,242	19,263	256	13,924	253	14,368	173	6,271
Egypt	30,000	65,000	1,763	78,253	1,907	39,803	1,850	[2]
France	19,482	26,075	1,128	22,530	766	14,000	812	[2]
Italy	90,546	99,289	3,680	104,966	3,886	121,824	3,830	78,736
Mexico	83,131	170,000	4,748	78,443	[2]	60,000	[2]	[2]
Roumania	19,598	70,138	5,104	102,552	5,207	86,412	5,056	[2]
Russia	25,920	39,598	4,020	80,911	4,049	63,398	......	......
Serbia	9,498	34,453	[2]	20,000	[2]	12,000	[2]	[2]
South Africa	8,784	20,000	[2]	[3]30,830	[2]	[3]30,750	[2]	31,168
Spain	21,255	26,433	1,137	30,325	1,152	29,096	[2]	[2]
United States	2,467,481	2,552,190	103,435	2,672,804	105,954	2,994,793	105,954	2,583,241
COTTON (bales):								
Brazil	220	265	[2]	385	[2]	440	......	......
French Indo-China	1,200	1,200	[2]	[2]	[2]	[2]	......	......
Egypt	1,305	1,045	1,822	1,425	1,231	1,349	......	......
India	3,727	4,123	25,023	4,239	24,595	4,359	......	......
Mexico	253	200	......	......	......	......	......	......
Persia[4]	71	128	......	......	......	......	......	......
Peru	45	44	[2]	[4]110	[2]	[4]106	......	......
Russia (Asiatic)	504	418	1,807	1,309	1,787	1,557	......	......
Turkey (Asiatic)	66	131	......	......	......	......	......	......
United States	13,439	10,005	36,832	16,135	31,412	11,192	......	......
HOPS (lb.)								
Australasia	......	2,206	......	1,667	......	......	......	......
Austria-Hungary	......	20,577	[1]	[1]	[2]	......	......	......
Belgium	......	3,861	6	7,560	[2]	[2]	......	......
France	......	5,029	7	7,034	7	5,363	......	......
Germany	......	13,356	68	51,227	59	32,106	......	......
Russia	......	8,267	[2]	14,084	[2]	[2]	......	......
United Kingdom	......	24,022	37	56,813	35	28,516	......	......
United States	......	50,697	[2]	43,415	[2]	59,320	......	......
OATS (bu.):								
Argentina	......	31,984	3,087	50,981	2,869	57,251	2,565	75,280
Austria-Hungary	177,523	251,277	......	225,651	......	221,925	......	......
Canada	202,827	353,466	10,061	313,078	11,365	520,103	9,795	351,174
Denmark	40,000	42,170	[1]1,059	38,653	1,024	42,834	1,040	42,282
France	261,264	331,183	8,873	274,458	8,062	206,795	7,796	246,158
Germany	477,852	628,712	10,843	622,674	11,404	412,400	[2]	[2]
Russia	1,081,034	1,145,387	[6]40,294	[6]722,488	[6]38,289	[6]770,453	......	......
Sweden	50,117	69,292	1,960	52,557	[2]	91,311	[2]	[2]
United Kingdom	191,565	184,370	3,879	180,241	4,139	194,631	4,146	186,043
United States	894,596	1,007,129	38,442	1,141,060	40,996	1,549,030	41,539	1,251,992
POTATOES (bu.):								
Austria-Hungary	639,407	682,927	......	......	......	......	......	......
Belgium	82,846	90,358	411	[2]	[2]	[2]	......	......
Canada	74,746	99,085	476	85,672	478	[5]62,604	......	......
France	375,000	613,041	3,676	440,652	3,225	332,788	......	......
Germany	1,702,893	1,716,143	8,367	1,675,370	8,827	1,983,161	......	......
Italy	29,000	63,273	727	61,104	725	56,768	......	......
Netherlands	96,695	97,275	424	120,780	438	126,741	......	......
Russia	1,082,723	1,204,528	[6]8,856	[6]909,486	[6]8,377	[6]729,805	......	......
Spain	84,000	98,860	688	76,657	[2]	[2]	......	......
Sweden	78,020	61,981	376	48,817	382	78,806	......	......
United Kingdom	265,713	256,752	1,197	279,121	1,201	281,502	......	......
United States	278,985	389,195	3,711	409,921	3,734	359,721	......	......

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[1] Area refers to 1910. [2] No official statistics. [3] Census figures of 1911. [4] Exports.
[5] Area and production, 1912. [6] Omitting Poland.

WORLD'S PRODUCTION OF PRINCIPAL CROPS, BY COUNTRIES—*Continued*

	1904 Production (000 omitted)	1909 Production (000 omitted)	1914 (000 omitted)		1915 (000 omitted)		1916 (000 omitted)	
			Acres	Production	Acres	Production	Acres	Production
RICE (lb.):								
Egypt	141,000	653,458	37	81,229	331	806,610	......	....
Formosa	2,598,100	1,446,000	1,235	1,447,709	[4]	[4]	......	....
French Indo-China	5,000,000	5,000,000	......	....	......	....	......	....
India	72,325,000	86,712,000	76,625	61,022,080	76,792	73,644,480	......	....
Italy	760,500	647,000	361	741,263	356	762,900	......	....
Japan	18,658,700	16,375,000	7,434	17,908,918	7,563	17,569,018	......	....
Java and Madura	6,431,000	7,566,000	6,346	7,826,026	[4]	[4]	......	....
Korea	3,200,000	3,200,000	[4]	3,678,878	[4]	3,518,928	......	....
Madagascar[2]	....	953,000	......	....	......	....	......	....
Philippine Islands	544,000	1,018,000	3,076	1,403,516	2,794	1,099,914	......	....
Siam	6,824,000	6,824,000	5,096	5,711,133	5,181	5,517,167	......	....
Spain	394,600	282,065	97	336,925	102	320,022	......	....
United States	619,400	702,709	694	656,917	803	804,083	......	....
RYE (bu.):								
Austria-Hungary	138,009	164,898	......	119,547	......	124,075	......	....
Belgium	22,000	23,154	645	23,137	[4]	18,000	[4]	[4]
Bulgaria	13,000	6,906	527	7,255	[4]	7,622	[4]	8,490
Canada	2,995	1,715	111	2,017	113	2,394	101	2,896
Denmark	18,000	18,922	[4]	10,905	521	12,989	479	10,580
Finland	....	12,085	[4]	10,806	[4]	10,000	[4]	[4]
France	53,343	54,934	2,614	32,002	2,309	33,072	2,275	35,524
Germany	396,075	446,763	15,565	410,478	15,843	360,310	[4]	[4]
Netherlands	14,000	17,652	563	13,471	546	13,727	499	12,391
Russia	1,008,381	896,833	66,082	820,078	66,195	882,155	......	....
Spain	19,000	34,901	1,887	23,950	1,820	26,102	1,856	31,436
Sweden	20,960	25,728	981	27,599	[4]	23,133	921	26,000
United States	27,242	29,520	2,541	42,779	3,129	54,050	3,096	47,383
SUGAR, CANE (short tons):								
Australia	127	185	......	297	......	235	......	....
Brazil	221	273	......	[4]228	......	[4]269	......	....
Cuba	1,165	1,704	......	2,891	......	2,967	......	3,369
India	19	1,097	......	2,566	......	2,757	......	2,952
Java	991	1,369	......	1,503	......	1,437	......	....
Mauritius	241	215	......	275	......	275	......	243
United States	754	1,226	......	301	......	[6]247	......	[6]139
BEET (short tons):								
Austria-Hungary	....	1,529	......	1,854	......	1,766	......	1,213
Belgium	227	272	......	251	......	225	......	125
France	900	785	......	791	......	340	......	164
Germany	2,158	2,292	......	2,994	......	2,756	......	1,896
Netherlands	....	217	......	231	......	316	......	262
Russia	1,351	1,242	......	1,681	......	1,947	......	1,699
United States	233	426	......	733	......	722	......	874
TOBACCO (lb.):								
Austria-Hungary	111,815	190,274	......	....	......	....	......	....
Brazil[6]	52,832	64,654	[4]	59,481	[4]	59,735	......	....
Cuba	42,421	59,323	[4]	80,770	[4]	50,078	......	....
Dutch East Indies	90,125	134,100	[4]	[5]155,612	[4]	[4]	......	....
Germany	75,797	62,120	26	50,192	22	[4]	......	....
India	450,000	450,000	7,038	1,038	......	....	......	....
Japan	106,075	91,850	89	126,206	75	105,821	......	....
Philippine Islands	33,100	40,258	150	103,024	132	84,443	......	....
Russia	204,298	207,451	[7]127	[7]181,723	[4]	[4]	......	....
Santo Domingo	....	30,000	......	[5]8,169	......	8,050	......	....
Turkey (Europe)	....	49,177	......	....	......	....	......	....
United States	665,461	1,065,765	1,224	1,034,679	1,370	1,062,237	......	....
WHEAT (bu.):								
Argentina	120,598	156,162	16,243	113,904	15,471	168,468	16,420	172,620
Austria-Hungary	203,998	186,085	......	[3]153,477	......	[3]208,934	......	....
Australasia	84,627	73,612	9,453	112,159	9,881	32,531	......	....
Canada	76,427	166,744	10,293	161,280	12,986	376,304	10,058	220,367
France	296,606	356,193	14,975	282,689	13,564	225,132	12,855	213,214
Germany	139,803	137,999	4,932	145,944	4,950	141,676	[4]	[4]
India	357,162	285,189	28,475	312,032	32,475	376,731	30,143	318,005
Italy	150,400	190,378	11,783	169,581	12,502	170,541	11,678	176,529
Roumania	53,738	56,751	5,218	49,270	4,705	89,241	4,843	78,520
Russia	706,706	783,270	[7]61,583	[7]573,384	59,083	653,206	......	....
Spain	110,000	144,105	9,681	116,089	10,037	139,298	10,070	152,329
United Kingdom	39,083	65,188	1,905	64,356	2,335	76,143	2,051	62,371
United States	552,400	683,530	53,541	891,017	60 469	1,025,801	52,785	639,886

[1] Year preceding. [2] Data for 1908. [3] Not including Galicia and Bukowina. [4] No official statistics. [5] Exports. [6] Continental U. S. only. [7] Not including Poland.

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, 1904–1917

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904 (census)	1909 (census)	1914	1915	1916	1917[1]
TOTAL:						
Barley (bus.)	139,749	173,321	194,953	228,851	182,309	208,975
Buckwheat (bus.)	15,008	14,849	16,881	15,056	11,662	17,460
Corn (bus.)	2,467,481	2,552,190	2,672,804	2,944,793	2,566,927	3,159,497
Cotton (500-lb. bales)[2]	13,438	10,005	16,135	11,192	11,450	10,949
Flaxseed (bus.)	23,401	19,513	13,749	14,030	14,296	8,473
Hay (tons)	60,696	68,833	70,071	85,920	91,192	79,528
Hops (lb.)	49,359	50,697	43,415	52,986	50,595	27,788
Oats (bus.)	894,596	1,007,129	1,141,060	1,549,030	1,251,837	1,587,286
Potatoes (bus.)	332,830	389,195	409,921	359,721	286,953	442,536
Rice (bus.)	21,096	21,839	23,649	28,947	40,861	36,278
Rye (bus.)	27,242	29,520	42,779	54,050	48,862	60,145
Tobacco (lb.)	660,461	1,055,765	1,034,679	1,062,237	1,153,278	1,196,451
Wheat (bus.)	552,400	683,366	891,017	1,025,801	636,318	650,828
AVERAGE PER ACRE:						
Barley (bus.)	27.2	22.5	25.8	32.0	23.5	23.7
Buckwheat (bus.)	18.9	16.9	21.3	19.6	14.1	17.4
Corn (bus.)	26.8	25.9	25.8	28.2	24.4	26.4
Cotton (lb.)	204.9	154.3	209.2	170.3	156.6	155.7
Flaxseed (bus.)	10.3	9.4	8.4	10.1	9.7	4.7
Hay (tons)	1.52	1.35	14.3	1.68	1.64	1.49
Oats (bus.)	32.1	28.6	29.7	37.8	30.1	36.4
Potatoes (bus.)	110.4	106.1	110.5	96.3	80.5	100.8
Rice (bus.)	31.9	35.8	34.1	36.1	47.0	37.6
Rye (bus.)	15.2	13.4	16.8	17.3	15.2	14.7
Tobacco (lb.)	819.0	815.3	845.7	775.4	816.0	827.1
Wheat (bus.)	12.5	15.4	16.6	17.0	12.2	14.2

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[1] Final estimate issued December 1.

[2] Excluding linters.

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1904–1917

(*Yearbook of the Department of Agriculture*)

	1904		1909		1914		1916		1917	
	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)
BARLEY (bus.):										
California	22.7	28,091	26.5	31,270	30.0	42,060	28.0	33,320	29.0	39,150
Idaho	37.4	1,707	40.0	2,480	38.0	7,030	39.0	7,410	29.0	5,510
Iowa	27.8	13,552	22.0	10,890	26.0	9,360	29.5	8,702	35.0	10,500
Minnesota	28.4	32,123	23.6	31,600	23.0	31,694	19.0	26,125	27.0	37,800
N. Dakota	28.1	17,518	21.0	20,727	19.5	28,275	15.5	26,738	12.5	22,812
S. Dakota	28.0	9,787	19.5	19,910	23.0	19,550	22.7	18,728	26.0	26,520
Washington	34.8	5,824	39.5	7,189	39.0	7,098	41.3	6,814	29.0	4,930
Wisconsin	30.0	14,941	28.0	24,248	27.3	18,428	30.0	18,300	32.0	19,200
CORN (bus.):										
Alabama	15.0	41,877	13.5	30,696	17.0	55,488	12.5	47,812	16.0	77,200
Georgia	11.9	47,234	13.9	39,375	14.0	56,000	15.5	62,000	38.0	418,000
Illinois	36.5	344,133	36.9	390,219	29.0	300,034	29.5	300,900	36.0	203,436
Indiana	31.5	143,396	40.0	195,496	33.0	163,317	34.0	174,658	37.0	410,700
Iowa	32.6	303,039	31.5	341,750	38.0	389,424	36.5	366,825	14.0	128,184
Kansas	20.9	134,609	19.9	154,652	18.5	108,225	10.0	69,500	31.5	122,850
Kentucky	26.9	86,815	29.0	83,348	25.0	91,250	28.0	95,200	21.5	37,625
Michigan	28.6	36,990	35.4	52,907	36.0	63,000	27.5	45,375	30.0	90,000
Minnesota	26.9	41,809	34.8	67,897	35.0	91,000	33.5	87,100	20.5	84,050
Mississippi	19.1	39,709	14.5	28,429	18.5	58,275	14.0	47,600	35.0	252,000
Missouri	26.2	151,522	26.4	191,427	22.0	158,400	19.5	132,112	27.0	249,480
Nebraska	32.8	260,942	24.8	180,133	24.5	173,950	26.0	192,400	38.0	150,100
Ohio	32.5	99,628	39.5	157,513	39.1	142,715	31.5	113,400	39.5	62,212
Pennsylvania	34.0	48,535	32.0	41,494	42.5	62,178	39.0	56,550	29.0	97,150
S. Dakota	28.1	43,855	31.7	55,559	26.0	78,000	28.5	84,075	28.5	111,150
Tennessee	25.0	80,890	22.0	67,682	24.0	80,400	26.0	78,000	11.0	77,825
Texas	22.6	136,702	15.0	75,199	19.5	124,800	19.0	120,200	22.0	42,196
Wisconsin	29.7	45,119	33.0	49,163	40.5	69,862	30.0	60,840		

PRODUCTION OF PRINCIPAL CROPS IN THE UNITED STATES, BY STATES, 1904–1916—*Continued*

	1904		1909		1914		1916		1917	
	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)	Average per Acre	Total (000 omitted)
Cotton (bales):										
Alabama....	182.0	1,448	142.0	1,024	209	1,751	79.0	533	110.0	505
Georgia.....	205.0	1,888	184.0	1,804	239	2,718	165.0	1,821	173.0	1,820
Mississippi..	220.0	1,798	157.0	1,083	195	1,246	125.0	812	153.0	895
N. Carolina..	233.0	704	210.0	601	290	931	215.0	655	187.0	570
Oklahoma...	248.0	804	147.0	545	212	1,262	154.0	823	150.0	890
S. Carolina..	215.0	1,151	210.0	1,100	255	1,534	160.0	932	205.0	1,235
Texas.......	183.0	3,146	125.0	2,523	184	4,592	157.0	3,726	135.0	3,115
Hay (tons):										
Iowa.......	1.62	5,074	1.64	5,983	1.38	4,071	1.60	5,920	1.23	3,887
Michigan....	1.25	2,658	1.30	3,403	1.28	3,011	1.70	4,675	1.50	3,837
New York...	1.36	6,480	1.05	5,002	1.20	5,584	1.62	7,047	1.46	6,110
Ohio........	1.43	3,880	1.43	4,033	1.13	3,178	1.57	5,102	1.42	4,154
Pennsylvania	1.45	4,499	1.20	3,742	1.28	4,020	1.60	5,208	1.40	4,329
Wisconsin...	1.67	2,959	1.53	3,625	1.75	4,462	1.70	4,420	1.70	4,595
Oats (bus.):										
Illinois......	32.0	117,341	36.6	150,386	29.3	125,990	38.5	172,095	52.0	244,400
Iowa........	32.0	122,323	27.0	128,198	33.0	165,000	37.0	188,700	47.0	246,750
Ohio........	40.9	49,733	32.5	57,591	30.5	50,325	28.0	48,076	44.0	78,100
Minnesota...	39.2	85,178	33.0	93,898	28.0	85,120	26.5	88,112	37.0	120,250
N. Dakota...	37.4	31,010	32.0	65,887	28.0	64,904	21.5	53,750	15.0	38,625
Wisconsin...	35.0	86,734	35.0	71,336	27.0	62,100	37.0	81,400	44.0	99,000
Potatoes (bus.):										
Iowa.......	136.0	22,354	89.0	12,905	86.0	12,642	42.0	4,830	95.0	13,110
Maine......	215.0	19,657	225.0	29,250	260.0	33,800	204.0	25,500	135.0	20,250
Michigan....	121.0	31,806	105.0	36,540	121.0	44,044	48.0	15,360	95.0	35,910
Minnesota...	102.0	13,995	115.0	18,400	114.0	30,780	60.0	16,800	112.0	33,600
New York...	93.0	41,129	120.0	52,560	145.0	53,215	70.0	22,400	95.0	38,000
Ohio........	98.0	16,029	93.0	16,926	95.0	14,250	45.0	6,300	100.0	16,000
Pennsylvania	106.0	27,174	78.0	23,790	105.0	28,140	70.0	19,040	92.0	29,532
Wisconsin...	126.0	31,499	102.0	26,724	124.0	37,696	47.0	13,630	114.0	34,998
Rice (bus.):										
Arkansas....	......	....	40.0	1,120	39.8	3,685	50.5	6,312	41.0	5,994
Louisiana...	30.4	11,445	33.8	12,675	32.1	10,802	46.0	20,392	36.5	18,250
Texas.......	35.5	8,314	34.0	9,894	33.8	8,102	45.0	10,575	27.0	6,210
Rye (bus.):										
Indiana.....	14.6	478	16.5	940	16.3	1,614	14.0	2,590	15.0	3,000
Michigan....	13.2	1,752	15.5	5,425	16.0	5,936	14.3	4,648	15.0	5,115
Minnesota...	17.7	1,648	19.0	2,280	18.8	5,245	15.0	5,250	18.5	7,585
New Jersey..	17.5	1,224	16.3	1,288	18.5	1,295	19.0	1,330	18.5	1,276
New York...	14.8	2,177	17.0	2,720	17.7	2,283	18.0	2,250	19.0	2,565
Pennsylvania	15.5	5,367	15.3	5,508	18.0	5,040	17.0	4,420	17.0	4,420
Wisconsin...	16.2	4,905	16.3	4,727	16.5	6,798	16.2	6,075	18.5	7,585
Tobacco (lb.):										
Connecticut.	1,685	21,407	1,650	22,110	1,770	35,754	1,630	36,186	1,400	29,540
Indiana.....	691	4,314	950	19,000	900	12,150	930	13,764	950	14,060
Kentucky...	827	229,417	835	350,700	910	364,000	900	435,600	900	426,600
Maryland...	621	19,913	710	17,750	800	17,600	770	19,635	790	22,594
N. Carolina..	685	98,618	600	144,000	650	172,250	550	176,000	630	204,750
Ohio........	849	50,793	925	83,250	900	78,120	950	95,000	960	99,072
Pennsylvania	1,289	18,635	985	30,732	1,450	47,995	1,360	49,096	1,400	58,100
S. Carolina..	703	8,185	800	32,000	730	36,500	520	20,280	710	51,120
Tennessee...	730	34,823	730	53,290	820	63,468	800	81,760	810	81,810
Virginia.....	725	96,487	775	120,125	650	113,750	680	129,200	700	129,500
W. Virginia..	710	2,901	875	12,600	820	8,856	900	12,690	800	9,040
Wisconsin...	1,282	52,473	1,180	37,170	1,180	53,808	1,270	55,753	950	45,885
Wheat (bus.):										
Illinois......	13.8	21,542	17.4	37,831	18.5	46,250	11.0	16,775	19.0	30,400
Indiana.....	9.2	12,525	15.3	33,936	17.4	43,239	12.0	19,440	18.5	33,292
Kansas.....	12.4	65,019	14.4	77,564	20.5	117,200	12.0	97,980	12.2	45,934
Michigan....	9.8	6,873	18.8	16,026	19.7	17,316	16.6	13,280	18.0	15,210
Minnesota...	12.8	68,344	16.8	57,094	10.6	42,975	7.6	26,410	17.5	57,965
Missouri....	17.7	27,163	14.7	29,837	17.0	43,333	8.5	16,575	15.3	27,540
Nebraska...	13.6	31,453	18.8	47,686	18.6	68,116	19.4	68,550	13.8	13,764
N. Dakota...	11.8	53,892	13.7	116,782	11.2	81,592	5.5	39,325	8.0	56,000
Ohio........	11.5	17,563	15.9	30,664	18.5	36,538	13.5	21,600	22.0	41,140
Pennsylvania	14.1	21,857	17.0	21,564	18.1	23,747	19.0	26,125	17.5	24,482
Washington.	22.2	32,140	23.2	40,920	23.5	41,840	23.7	37,635	15.8	29,218

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS, 1904-1917

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904	1909	1914	1915	1916	1917
IMPORTS						
Total, excluding Forest Products	$461,434	$638,612	$924,247	$910,876	$1,186,642	$1,320,802
Animal matter:						
Cattle	310	1,999	18,697	17,513	15,188	13,021
Horses	1,460	2,007	2,605	977	1,618	1,888
Sheep	815	502	532	534	918	857
Other animals including fowls	543	528	2,878	3,255	926	837
Butter	34	141	1,753	977	212	193
Cheese	3,284	5,866	11,011	9,370	7,058	4,466
Cream	....	....	1,550	1,800	1,043	666
Milk	32	23	1,089	2,557	1,515	1,746
Eggs	61	36	1,060	439	111	268
Silk	46,100	79,903	100,930	83,131	124,334	160,572
Wool	24,813	45,171	53,191	68,243	142,421	131,137
Packing-house products:						
Hides and skins	52,006	78,487	120,290	104,177	158,861	216,364
Meat	935	796	20,402	25,398	11,063	7,250
Vegetable matter:						
Cocoa	9,174	15,222	20,798	22,803	35,144	39,834
Chocolate	426	339	706	585	660	553
Coffee	69,551	79,112	110,725	106,766	115,486	133,184
Vegetable fibers:						
Cotton	8,541	13,622	19,457	23,209	40,150	40,430
Flax	2,541	2,542	2,870	1,876	3,508	4,236
Hemp	869	799	1,564	1,156	1,642	2,487
Jute	4,104	7,216	11,174	4,677	7,915	9,855
Manila	11,423	7,156	9,780	9,201	14,067	17,274
Sisal grass	15,935	10,215	25,861	20,572	25,803	25,932
Fruits	18,964	22,446	33,638	27,081	23,286	25,316
Corn	10	189	7,917	6,083	2,865	1,489
Oats	57	2,651	7,886	290	303	473
Wheat	7	36	1,762	470	5,789	19,255
Wheat flour	164	446	364	310	1,689	553
Hay	914	60	1,634	229	679	628
Hops	1,374	1,337	2,791	2,779	145	59
Distilled spirits	4,957	7,676	7,264	5,570	7,232	7,793
Malt liquors	2,313	3,215	2,967	1,587	1,457	1,400
Wines	9,391	12,276	10,117	6,247	7,997	8,486
Nursery stock	1,496	1,946	3,597	3,749	3,686	3,956
Nuts	5,471	8,664	19,783	16,820	21,166	32,865
Oils, vegetable	11,179	18,238	32,321	24,781	33,919	46,993
Rice, rice meal, etc	3,073	4,698	7,474	6,304	6,094	5,774
Sago, tapioca, etc	695	1,396	1,642	1,434	2,227	3,713
Seeds	3,587	5,958	20,084	23,055	33,572	35,880
Spices	4,366	5,348	5,596	5,927	8,047	7,744
Sugar	71,915	96,551	101,649	173,993	208,769	230,946
Tea	18,229	18,562	16,735	17,513	20,600	19,265
Tobacco	16,939	25,405	35,039	27,157	24,619	25,482
Vegetables	7,008	12,999	15,434	9,330	10,811	29,151
EXPORTS						
Total, excluding Forest Products	859,160	903,238	1,113,974	1,475,938	1,509,818	467,858
Animal matter:						
Cattle	42,256	18,046	647	703	2,378	950
Horses	3,189	3,386	3,389	64,047	73,531	59,525
Mules	412	472	691	12,726	22,960	27,801
Sheep	1,954	365	535	182	232	367
Swine	53	144	134	93	239	348
Other live animals[1]	111	114	408	203	331	392
Butter	1,768	1,208	877	2,392	3,590	8,749
Cheese	2,452	857	414	8,463	7,430	15,244
Milk, condensed	1,367	1,375	1,341	3,067	12,713	25,130
Eggs	396	1,199	3,734	5,004	6,134	7,570
Packing-house products:						
Beef, canned	5,882	1,645	462	11,973	9,430	16,966
Beef, cured	3,281	3,472	2,290	3,383	4,034	6,728
Beef, fresh	26,841	12,698	789	21,732	28,886	26,277
Hides and skins	3,246	1,271	2,807	4,686	3,875	3,015
Lard	46,347	52,712	57,773	55,462	47,634	77,013
Lard compounds	3,581	6,115	5,489	6,046	5,147	8,270
Pork, cured	56,268	54,046	54,543	81,287	126,171	174,638
Pork, fresh	1,669	938	359	474	7,523	8,875

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[1] Including fowls.

IMPORTS AND EXPORTS OF IMPORTANT AGRICULTURAL PRODUCTS—*Continued*

(*Yearbook of the Department of Agriculture*)

(000 omitted)

	1904	1909	1914	1915	1916	1917
Exports—*Continued*						
Vegetable matter:						
Cotton	$372,049	$417,390	$610,475	$376,218	$374,186	$543,101
Fruits	20,348	16,079	31,031	34,230	36,073	37,653
Barley	6,292	4,672	4,253	18,184	20,664	19,027
Buckwheat	....	....	1	397	481	351
Corn	30,071	25,194	7,008	39,339	30,780	72,497
Oats	475	804	758	57,469	47,986	55,035
Rye	440	1,049	1,555	14,733	15,374	21,695
Wheat	35,850	68,094	87,953	333,552	215,533	298,180
Cornmeal	1,691	1,549	1,186	1,923	1,601	2,757
Oatmeal	463	516	569	2,416	1,886	4,491
Wheat flour	68,894	51,157	54,454	94,869	87,338	93,202
Total grain and grain products	76,215	160,162	165,302	573,824	435,679	589,235
Hops	2,116	1,271	6,954	3,948	4,387	776
Distilled spirits	1,691	1,883	2,276	1,982	11,062	18,500
Malt liquors	854	1,010	1,485	1,082	1,065	1,442
Oil cake	17,069	25,836	21,668	28,879	28,561	31,287
Vegetable oils	12,618	23,098	16,251	25,832	27,165	26,280
Seeds	2,583	5,256	3,191	3,861	3,539	4,002
Sugar	532	2,785	1,840	25,615	79,390	77,091
Tobacco	29,640	30,902	53,964	44,494	53,364	59,954
Vegetables	2,603	3,760	6,936	10,813	15,952	22,291

AVERAGE PRICES OF AGRICULTURAL PRODUCTS, 1904–1917

(*Yearbook of the Department of Agriculture*)

	1904	1909	1914	1915	1916	1917
Farm Crops:[1]						
Barley (bus.)	$0.42	$0.54	$0.543	$0.517	$0.881	$1.137
Beans (bus.)[2]	1.72½–2.20	2.25–2.75	2.10–3.10	2.85–4.10	5.100	6.52
Buckwheat (bus.)	0.622	0.701	0.764	0.787	1.127	1.601
Corn (bus.)	0.441	0.579	0.644	0.575	0.889	1.283
Cotton (lb.)	0.0873	0.139	0.068	0.112	0.196	0.277
Flaxseed (bus.)	0.993	1.529	1.256	1.74	2.480	2.968
Hay (tons)	8.72	10.50	11.12	10.70	11.220	17.09
Hops (lb.)[3]	0.32–0.41	0.12–0.39	0.23–0.50	0.13–0.30	0.120	0.337
Oats (bus.)	0.313	0.402	0.438	0.361	0.524	0.669
Potatoes (bus.)	0.453	0.541	0.487	0.616	1.461	1.229
Rice (bus.)	0.658	0.796	0.924	0.906	0.906	1.894
Rye (bus.)	0.688	0.718	0.865	0.839	1.221	1.663
Tobacco (lb.)	0.081	0.101	0.098	0.091	0.147	0.249
Wheat (bus.)	0.924	0.986	0.986	0.92	1.603	2.009
Live Stock:[4]						
Cattle:						
Beef[5]	1.70–7.65	2.90–9.50	4.85–11.25	4.00–13.60	6.56	8.21
Milch cows	29.21	32.36	53.94	55.33	63.18	75.
Other cattle	16.32	17.49	31.13	33.38		
Horses	67.93	95.64	109.32	103.33	129.00	129.
Mules	78.88	107.84	123.85	112.36		
Sheep	2.59	3.43	4.04	4.50	6.77	10.20
Swine	6.15	6.55	10.40	9.87	8.76	15.31
Live Stock Products:						
Butter (lb.)[6]	0.17½–0.28	0.25–0.37	0.24½–0.50	0.24–0.36½	34.4	41.9
Eggs (doz.)[7]	0.16–0.47	0.19–0.55	0.20–0.62	0.18–0.44	38.1	43.3

[1] Average farm prices Dec. 1. [2] Wholesale prices at Boston. [3] Wholesale prices at New York. [4] Prices per head, Jan. 1. [5] Wholesale prices of inferior to prime beef per 100 lb. at Chicago, for the year. [6] Wholesale prices of extra creamery butter at New York. [7] Wholesale prices of average best fresh eggs at New York.

LIVE STOCK IN THE UNITED STATES, 1905–1917

(*Yearbook of the Department of Agriculture*)
(000 omitted)

	Number Jan. 1, 1905	Number Jan. 1, 1910	Number Jan. 1, 1915	Number Jan. 1, 1916	Number Jan. 1, 1917
MILCH COWS:					
Total, U. S.	17,572	21,801	21,262	22,108	22,768
Illinois	995	1,232	1,007	1,047	1,057
Iowa	1,335	1,570	1,377	1,391	1,405
Michigan	556	936	814	847	865
Minnesota	836	1,125	1,186	1,240	1,302
Missouri	569	925	797	837	845
New York	1,721	1,771	1,509	1,539	1,539
Ohio	790	947	895	922	950
Pennsylvania	1,086	1,140	943	971	980
Texas	838	1,137	1,086	1,119	1,175
Wisconsin	1,095	1,506	1,626	1,675	1,750
OTHER CATTLE:					
Total, U. S.	43,669	47,279	37,067	39,812	40,849
California	1,122	1,120	1,480	1,558	1,636
Illinois	1,666	1,974	1,180	1,239	1,251
Iowa	3,467	3,611	2,683	2,737	2,754
Kansas	2,682	3,260	1,768	2,160	2,115
Minnesota	941	1,228	1,208	1,275	1,340
Missouri	1,490	2,165	1,414	1,555	1,600
Nebraska	2,379	3,040	2,034	2,237	2,349
Oklahoma	1,284	1,637	1,119	1,186	1,222
Texas	8,249	7,131	5,121	5,428	5,482
Wisconsin	1,148	1,081	1,216	1,313	1,340
HORSES:					
Total, U. S.	17,058	21,040	21,195	21,159	21,126
Illinois	1,232	1,655	1,467	1,452	1,452
Indiana	636	847	854	854	854
Iowa	1,144	1,447	1,600	1,584	1,552
Kansas	880	1,187	1,132	1,109	1,120
Missouri	809	1,005	1,095	1,060	1,040
Nebraska	795	1,045	1,038	1,028	1,018
Ohio	785	977	910	901	892
Oklahoma	354	804	758	743	743
Texas	1,277	1,369	1,192	1,180	1,156
MULES:					
Total, U. S.	2,889	4,123	4,479	4,593	4,639
Alabama	161	253	281	281	278
Georgia	201	248	309	315	324
Mississippi	219	290	292	292	292
Tennessee	163	290	275	272	270
Texas	391	702	753	768	760
SHEEP:					
Total, U. S.	45,170	57,216	49,956	48,625	48,483
Arizona	816	1,020	1,761	1,700	1,632
California	2,180	2,372	2,500	2,450	2,524
Colorado	1,458	1,729	1,751	1,839	1,950
Idaho	2,978	4,248	3,041	3,102	3,195
Michigan	1,759	2,151	2,033	1,931	1,834
Missouri	770	957	1,490	1,416	1,370
Montana	5,638	5,747	4,379	3,941	3,744
New Mexico	2,856	4,729	3,340	3,440	3,300
Ohio	2,601	3,203	3,263	3,067	2,944
Oregon	2,546	2,581	2,563	2,435	2,484
Texas	1,617	1,909	2,114	2,156	2,328
Utah	2,344	3,177	2,068	2,089	2,089
Wyoming	3,267	7,316	4,427	4,338	4,381
SWINE:					
Total, U. S.	47,321	47,782	64,618	67,766	67,453
Georgia	1,396	1,647	2,042	2,348	2,585
Illinois	3,747	3,772	4,358	4,489	4,444
Indiana	2,631	2,578	4,167	4,010	3,970
Iowa	7,290	6,485	8,720	9,069	9,370
Kansas	1,949	1,942	2,656	2,815	2,535
Missouri	3,110	2,714	4,250	4,505	4,280
Nebraska	2,888	3,201	3,809	4,266	4,309
Ohio	2,701	2,047	3,640	3,713	3,527
Texas	2,525	3,205	2,880	3,197	3,229
Wisconsin	1,653	1,651	2,225	2,142	2,060

AGRICULTURAL STATISTICS FROM CENSUS OF 1910

(*Yearbook of the Department of Agriculture*)

	Total	Per cent age
Land area (acres)	1,903,290,000	.....
Farms (acres)	878,798,000	46.2
Improved (acres)	478,452,000	54.5
Woodland (acres)	190,866,000	21.7
Other unimproved (acres)	209,481,000	23.8
Number of farms	6,361,502	.....
Average area per farm (acres)	138.1	.....
Average area of improved land per farm (acres)	75.2	.....
Farms under 20 acres		13.2
Farms of 20 to 99 acres		44.8
Farms of 100 to 499 acres		39.2
Farms of 500 to 1,000 acres and over		2.8
Value of crops of Continental U. S.	$5,487,161,223	.....
Value of all farm property, and per cent. increase	$40,991,450,000	200.5
Value of land	$28,475,674,000	218.1
Value of buildings	$6,325,452,000	177.8
Value of implements and machinery	$1,265,150,000	168.7
Value of animals, poultry and bees	$4,925,173,000	160.1
Value of all property represented in—		
Lands		69.5
Buildings		15.4
Implements and machinery		3.0
Animals, poultry and bees		12.0
Average value per farm of—		
All property	$6,444	.....
Lands and buildings only	$5,471	.....
Average value of land per acre	$32.40	.....
FARM EXPENSES		
Labor:		
Farms reporting	2,922,288	.....
Per cent. of all farms		45.9
Cash expended	$521,727,000	.....
Rent and board furnished	$129,878,000	.....
Feed:		
Farms reporting	2,368,905	.....
Per cent. of all farms		37.2
Amount expended	$299,839,000	.....
Fertilizer:		
Farms reporting	1,823,032	.....
Per cent. of all farms		28.7
Amount expended	$114,884,000	.....
NATIVITY OF FARM OPERATORS		
Number of farms operated by—		
Native white	4,771,063	.....
Foreign white	669,556	.....
Negro and other non-white	920,883	.....
Percentage of operators who own their farm among—		
Native white		66.3
Foreign white		81.4
Negro and other non-white		26.2

XVII. THE MINERAL INDUSTRIES

MINING AND ORE DRESSING

CHARLES E. LOCKE

The Mining Industry.—If high prices of product were the only factor necessary for mining prosperity, the year 1917 should have exceeded even the record year of 1916, but unfortunately the high prices of product have been accompanied by higher costs of operation for labor and supplies, by a shortage of labor, by strikes, and by a decreased efficiency on the part of the laborer. The mine owners, however, have certainly done their share in exerting the highest pressure for production.

Iron ore shipments from Lake Superior districts amounted to 46,059,706 tons up to Oct. 1, a decrease of 2,756,944 tons from the corresponding period of the record year 1916, and it is estimated that the year will show a falling off of approximately 6,000,000 tons from the 64,734,198 tons total of the year 1916. This decrease may be attributed to late opening of navigation, labor shortage, and the ruling of the National Defence Council that stocks of ore at Lake Erie ports should not exceed the blast-furnace requirements up to June, 1918.

Three metals have made record prices during the year, *viz.*, pig iron at around $50 per ton, silver at around $1.10 per ounce, and lead at around 11 cents per pound. Other metal prices, while much higher than normal, have steadied down materially and have not reached the panicky figures of 1915 and 1916. In general it may be said that these prices have been between 50 and 100 per cent. above normal.

Late in the year the government regulation of prices on some of the metals went into effect (see also *Iron and Steel, infra*). While this settled the prices that the Government will pay, it is too early to predict that it will be possible to nullify the laws of supply and demand and that the outside purchaser will be able to get all the metal he wants at these prices.

The labor situation during the year has been bad. Men have been scarce, and in spite of increased wages and bonuses and every effort on the part of producers to satisfy the mine laborer, the latter has become more arrogant and inefficient. The granting of one demand has led only to the making of another. An extraordinary number of strikes occurred during the year (see also XV, *Labor*). Starting with the Anaconda smeltermen's strike in February, followed by the ten-days' strike at Jerome, Ariz., the latter part of May, the culmination came in June and July with strikes in Missouri at Flat River, in Arizona at Bisbee, Clifton-Morenci and Globe-Miami, in Michigan on the Gogebic Range, in Colorado at Leadville, and in Montana at Butte. Later in the year came the copper-miners' strike in Shasta County, California, and the coal-miners' strike in Indiana and Illinois. An attempt to start a strike in the Lake Superior copper district was a failure. Some of these disturbances were of long duration and not until near the end of the year did the mines get back to normal running. The money loss due to these strikes has been very great. Their inception may be laid primarily at the door of the Industrial Workers of the World, but back of them, it is generally believed, will be found German influence and monetary support. The only satisfaction that the producers can have is that in most cases the strikers failed entirely to obtain their demands or were granted only a small portion of them.

The stimulus of good prices has not only pushed the production of active mines to as high a point as possible, but it has led also to the reopening of old mines and the development of new districts. For example, there had been a boom in the Jerome copper camp of Arizona, a rejuvenation of Chloride, Ariz., resumption of old gold mines in California, and the reopening of old copper mines in Vermont at Ely, South Strafford and Pike Hill, and in Maine at Blue Hill. The last has been idle for decades. The copper camp of Butte, Mont., has increased its zinc output, and zinc bids fair to become a very important product. Very recently the manganese veins of Butte have been exploited and put on a basis of commercial production which promises to increase. The Miami zinc district of Oklahoma is constantly enlarging in area as new mines are opened in what was formerly considered to be non-mineral ground. The unwatering projects at Leadville, Col., have come to a successful end, and from now on an era of deep mining may be expected which will add much to the life of this old camp. In Alaska, the mine of the Alaska Gold Mines Co. still continues a disappointment. The Alaska Juneau Co. started production in April. The Treadwell gold mines in Alaska suffered a great disaster when a cave allowed the ocean water to rush in and drown them out. It seems probable that these famous producers will never be reopened. Mexico still lags behind, and although some improvement is noted over 1916, the majority of the mines continue idle.

A continued decrease in mine accidents is to be noticed, due to the continuance of the safety-first movement. The North Butte Mine at Butte, Mont., was the scene on June 9 of a disastrous fire in the mine shaft, which caused the loss of 160 lives by suffocation and a very serious curtailment in production.

Progress in mining methods has not been great, being confined mainly to a decrease in the use of timber and an increase in the use of one-man hammer drills. These drills today are not only superior to piston drills but are also far ahead of the hammer drills of only a few years ago.

Ore Dressing.—In ore dressing old mills have been remodelled and new mills have been built, designed largely to use flotation. Many of them are for small mines and old dumps. High prices of labor, machinery and materials have retarded the movement somewhat, but in general the operators consider that these are offset by the high prices of metals. Iron-ore washing in the Mesabi district is on the increase. Ball mills are growing more in favor for fine grinding and are replacing stamps in gold mills. A modification of the ball mill is the Marathon mill, which substitutes rods for balls. Amalgamation is yielding to cyaniding on gold ores. Oil flotation still continues the wonder of milling (see also *Copper*, and *Gold and Silver, infra*). Over 400 mills in America are using it. It will prolong the life of Cobalt considerably. It is coming into use in the Missouri zinc district and is finding application in floating native gold and copper. Flotation litigation continues and the situation is still very much mixed. The decisions of the year in the Miami and Butte and Superior cases (*A. Y. B.*, 1916, p 486) were all in favor of the Minerals Separation Co. but they are not final by any means.

COAL, COKE, AND PETROLEUM

R. Dawson Hall

Coal Mining.—The high price and unusual demand for coal during the year might well have been expected to bring about an exceptional development of the coal industry on the technical side. The high price of machinery and the brief period during which unusual profits were made, however, prevented any such development, and the year was rather one of makeshifts than of progress.

The coal industry is at a parting of the ways. In the past the main care has been to obtain a product of large size. At first the fine coal from the undercut, like the chips from the lumberman's axe, was thrown away as waste. Gradually, however, a use was found for this fine coal and the demand for it has increased so greatly that at times during the year it was reported that run of mine containing much large coal was being crushed to make fine material for stoker furnaces. The demand for coal of small size for coking, in beehive or in by-product ovens, for burning under automatic grates and for pulverization is making a place for fine coal. This will have its effect on coal mining, bringing its technique nearer that of metal mining, where the more the product is comminuted in mining the more desirable it is, because it then requires less crushing in the later stages of treatment.

There are at least two plants, one owned by the Tennessee Coal, Iron and Railroad Co. and one by the Valier Coal Co., where the coal is dumped or is to be dumped at the door of the shaft like ore and elevated in skips instead of in cars on a cage. There is thus a large saving in the weight to be hoisted and this saving is reflected in the power bills, the cost of the hoist and the size of the rope. With a suitable bin from which to load the skip the process of hoisting can be made largely independent of the movement of the underground motor trips. Inevitably the coal is broken, and if large coal is desired, the method is in a way undesirable. That consideration, however, as has just been shown, is now not so important as before. Time indeed may put a premium on small coal, only slight, however, for coal can be broken more readily than it can be briquetted. Still, for years to come, until we burn more coke in domestic furnaces or make a hybrid between coal and coke, there will be a demand for screens and undercutting machines and other preparing and condition-saving devices, so the work of the past few years will not be thrown away.

Ventilation of coal mines through canvas conduits is making some headway but is held back by laws requiring frequent crosscuts. The canvas conduit is easily suspended after a shot and so produces readily a more perfect ventilation in dead ends than is otherwise obtained. The air is passed through the pipe by a small diverting or "booster" fan. If it were lawful to drive longer distances with these aids, it would be possible to leave bigger pillars, because the size of the pillar is regulated by the cost of driving crosscuts through it and the cost is a function of the frequency and length of crosscuts. Advance also is delayed where crosscuts are numerous and long. Because of the laws relating to crosscuts that are peculiar to coal mining, the canvas conduit so far has not made the progress in coal mines that it has made in metal workings.

F. S. Peabody, chairman of the Committee on Coal Production, urged at the St. Louis meeting of the American Institute of Mining Engineers that coal be removed by a system in which the headings are driven to the boundaries, and the coal proper taken out from the remote portions of the mine first. It is recognized that this is a far more expensive method than any now in use but it has its advocates. The use of conduits and infrequent crosscuts might make complete extraction possible without using the retreating system that Mr. Peabody suggests, but there are systems available even where narrow work is expensive and regulative laws severe.

The lighting of coal mines has been almost universally by individual lamps, of one of many forms, carried by the workmen. Latterly the landings in shafts, the gathering partings and important gangways, somewhat in the order named, have been in turn provided with stationary electric lights. Recently in some mines where intensive work is practiced, the use of stationary electric lights at the miners' working faces has been adopted, the rooms being regularly wired for that purpose.

In the Fairmont region it has been thought well recently to provide storage for a whole days' run so that the miners can work when there are no railroad cars delivered on the mine siding. Should cars be placed near quitting time, the output of the whole day can then be dumped in an hour. This provision, however, is of more value to the railroad than to the coal operator, and it is therefore not likely to be adopted generally. Like all storage provision it is fruitful of coal breakage.

Oil and Gas.—The oil and natural-gas industry in the year 1917 showed more clearly than ever before the development of petroleum engineering and of the geological investigation which goes with it. At one time no profession was more entirely empirical. Among the many valuable developments in petroleum engineering it is hard to select the most vital and interesting. It is perhaps dangerous to draw too many deductions and to regard as a general law what has been found in a careful study to be true of one field.

Oil and gas are usually found in anticlines and domes and water appears in the synclines adjacent. It has been found in the Cushing field, according to Carl H. Beal of the U. S. Geological Survey, that the oil area in the sand extends farther down the easier slopes of the anticline or dome than on the steeper slopes. It has been found also that the water in the Layton and Wheeler sands of the Cushing field is not level but slopes in the direction of the slope of the measures. Development only increases that inclination, and in some cases it is found to exceed the slope of the oil sand, so that "some of the wells near the centers of the more productive areas, which lie on the crests of the domes and anticlines, might begin to show water before it appeared in the wells on the flanks of these folds, and moreover after the wells on the crest had gone completely to water there might still be a small commercial deposit of oil remaining on the sides of the folds."

IRON AND STEEL

Edwin F. Cone

General Conditions.—The course of the iron and steel industry in 1917 has presented conditions unparalleled in its history. Events have moved rapidly to a culmination little suspected a year ago. Advance has been almost entirely of a commercial nature. Production has gone on with steadily increasing momentum in most lines, but prices, which had been gradually advancing in 1916, got beyond control about the middle of 1917 and in all lines reached the maximum in the history of the industry. By July and August $50 basic and Bessemer pig iron was a reality, with low-phosphorus iron selling at $100 per ton. Steel billets of various kinds had touched over $100 a ton, and steel plates had gone to 10 cents and even 12 cents per pound, with steel bars and structural steel at corresponding prices. The cause was the headlong bidding for material of all kinds by foreign Governments and by domestic consumers, a movement which received added momentum with the declaration of war against Germany by the United States Government in April. The result of our entry into the war and of the dangerous rise in prices has been the regulation of almost the entire iron industry by the United States Government. Towards the end of the year price levels were reduced by the establishment of maximum prices of iron ore, coke, pig iron and many important steel products, but they still remained above the levels of early 1916. The revision has been orderly and has resulted in the cordial and patriotic coöperation of leading steel men with the Government in a time when such coöperation is essential for the success of the war. (See also XII, *Economic Conditions;* and XVIII, *Manufactures.*)

Metallurgical progress has not been very striking so far as surface conditions are concerned. Little time has been left for research work; but it is undeniable that progress of an important nature has been made, much of it kept quiet until after the war.

Iron and Manganese Ores.—Technical development in iron ores has made little progress. There has been a large demand for ore, the Lake ore shipments at the end of 1916 of 64,734,198 gross tons exceeding any previous record, the next largest having been 49,070,478 tons in 1913. With steel production at a high pressure the one aim in 1917 has been to get ore to the blast furnaces. The 1917 pig-iron output will fall somewhat short of the record total of 39,434,797 tons in 1916, due to coke shortage and other reasons; nor will the Lake ore shipments equal the 1916 record; they bid fair to be about seven per cent. less (see also *Mining and Ore Dressing, supra*). The usual concentration and beneficiation processes have received new impetus to supply iron ore. Import of foreign ore has been pushed but receipts have fallen off one-third due to lack of vessels. There has been an incentive to open old and new mines but it has not resulted in anything striking.

Great importance has been given to the manganese-ore situation by the war. Steel cannot be made without manganese in the form of ferro-manganese or spiegeleisen. Before the war high-grade ore for making 80 per cent. ferromanganese came from Russia, India and Brazil. Domestic output was negligible, only 2,000 to 4,000 tons before the war and only 9,700 tons in 1915. With the stimulus of record prices and with supplies from Russia and India practically cut off, our own output in 1917 will hardly exceed 80,000 to 90,000 tons. To run the steel industry of the United States at least 800,000 to 900,000 tons per year is necessary, of which total Brazil has furnished 80 to 90 per cent. The country is still dependent on foreign sources for this material and a failure of this source would cripple the steel industry. Unusually important researches are now on foot to lessen this menace to the industry. The U. S. Bureau of Mines, coöperating with steel companies and metallurgists, is at work on problems of the practical use of the manganese in our vast resources of manganiferous iron ore, of the making of high-manganese alloys in electric furnaces and of methods of conserving manganese already present in the steel-making processes. An important problem is the finding of a way to use some of the high-manganese steel slags now wasted in this country.

Ferroalloys.—Important progress has been made in the ferroalloy field. A prominent element has been the measures taken to increase the domestic output of 80 per cent. ferromanganese from foreign ores. Before the war the steel industry depended on England to supply not less than 50 per cent. of the amount of this alloy consumed. To-day our own production of this alloy has more than doubled, and we are now furnishing the industry with about four-fifths of its needs.

The domestic production of 50 per cent. of ferrosilicon has largely increased during the year. Before the war there was but one company producing it in the United States; to-day there are five. The steel industry's consumption has greatly increased due to the demand for munition steel.

In ferrotungsten the United States now takes first rank as the largest producer of this important tool-steel alloy. Besides supplying the needs of a large domestic consumption, over 1,750,000 lb. was exported in the fiscal year ended June 30, 1917.

Blast Furnaces.—Few strides have actually been made in blast-furnace development during the year. Furnacemen have been too busy trying to get out production under unusually difficult conditions, due to labor troubles and a scarcity of coke. Some features originated in past years have been developed further. In the new stacks being constructed or in old ones that are being relined, hearths are being enlarged and boshes made steeper, up to 79 or 80 deg. or more. This is now generally recognized as a decided improvement. Small checkered stoves with greatly increased heating surface, in connection with clean gas, are growing more popular. Two-pass or four-pass stoves, the latter particularly at Joliet, appear to be growing in favor as compared with three-pass stoves because of the accessibility of valves, which are all on the ground, and because of simpler construction. Gas washing, in connection with smaller checkered stoves, has received a decided impetus. Even isolated furnace plants having no market for excess gas or its equivalent in steam or electric power are installing washers on account of improved stove practice. Heat insulation of stoves, hot-blast mains and bustle pipes on new and relined units is being generally adopted. Brick, infusorial earth and asbestos or magnesia products are all being used. A recent innovation is the use of high-temperature cements in the combustion chambers and top checker construction of stoves, either as a surface wash or in place of fire clay. Experiments have been made with their use for some distance above the mantel in the furnace. During the year the Mathesius hot-blast gate valve has been pushed as offering various improved features over the old mushroom type. The Berg automatic mud gun is being installed at a number of plants. Labor-saving devices are being seriously considered wherever possible because of the labor scarcity. Serious shortage of coke as well as a marked decrease in its quality have resulted in a steady decrease in pig-iron output during the year. The recovery of potash from blast-furnace dust has developed considerably, and is recognized as commercially successful. It has even been adopted in England as a war measure.

By-Product Coke Ovens.—Commercial reasons have continued to act as an impetus to the introduction of the by-product coke oven, and the number of this type as compared with the beehive oven has continued to increase until they greatly exceed and are replacing the older type. The great value of the chemical by-products, benzol, toluol, etc., has continued to be the cause. Technical advance has not been important. Because of the great expansion of the dye industry in the United States continued increase in the number of by-product ovens may be expected.

The Electric Furnace.—Surprising strides have been made in the production of steel in the electric furnace in the United States during the last year. On Jan. 1 this country led all countries of the world in number of furnaces and in output. It was then credited with 136 furnaces of all types, as against 73 on Jan. 1, 1916. By the end of the year the total was easily double that of Jan. 1, so that this country will continue to maintain its world supremacy over Germany and England. The 1917 production of electric steel of all grades has been estimated by some at 1,000,000 tons. It will certainly be five-fold that for 1916, when it was 168,918 tons. It was only 69,412 tons in 1915. The expansion bids fair to be permanent and not a mere outgrowth of the war. Besides its efficiency in making high-grade steel castings, the electric furnace has shown rapid development in producing superior tool and special steels. Hardly a crucible tool-steel plant exists to-day in the country which does not now make electric steel. The largest electric steel furnace in the world is now operating in the United States. It is a 25-ton Heroult furnace at the plant of the Duquesne Steel Co., Pittsburgh. The largest electric steel plant in the world started in November at the U. S. Steel Corporation's South Chicago plant, where two 25-ton and two 15-ton Heroult furnaces constitute the equipment, with other 25-ton furnaces to be added. (See also XXIII, *Electrochemistry.*)

Electric Pig Iron.—A striking advance has been the production on a commercial scale of high-grade pig iron direct from steel scrap in the electric furnace (*Iron Age*, Aug. 30, 1917). The high cost of low-phosphorous pig has made this possible. Steel scrap is melted in an electric furnace, refined to the extent necessary, and then carbon is introduced as fine coke or coal together with ferromanganese and ferrosilicon to obtain the necessary composition. Iron of unusual strength and quality has thus been made in large quantities. Iron castings have also been made from this iron direct and they have shown excellent properties.

Centrifugally Cast Iron Pipe.—A novel method of making various sizes of cast-iron pipe in a rapidly revolving water-cooled mold has now reached commercial proportions in North America. For several years the method has been in regular commercial use in Brazil (*Iron Age*, Sept. 7, 1916). A company is now successfully making 10-in. pipe by this method in Canada.

Steel Making and Special Steels.—The steel-making part of the iron industry has been rushed at top speed to keep pace with the demand. In the early part of the year the foreign demand for crude and finished steel for shells and munitions as well as cars and locomotives kept the furnaces busy. After our entry into the war there came the added need of supplying ships for the world on a greater scale than ever before attempted, special steels for airplanes and motor trucks, and steel for shells, cars and locomotives for both foreign and domestic consumption. The record output of steel ingots and castings of 42,773,680 gross tons in 1916 will probably be exceeded in 1917 by about two per cent. Nearly four-fifths of the 1916 output was open-hearth steel and the proportion will not be far different in 1917.

There have been no radical changes in processes. The duplex and the triplex methods continue to develop and grow in favor. There has undoubtedly been a radical change in the method of casting ingots, with probably a gradually general adoption of the method of pouring them large end up with a sink head. The demands of foreign munition makers have been a cogent factor in this much needed reform.

One new steel of importance made its appearance. It is a new permanent-magnet steel containing chromium instead of tungsten. It is made by several large American electric-steel makers and its efficiency and satisfactory quality is attested by numerous large users. The growing use of stainless steel, also a chromium steel, is also to be noted.

COPPER

L. S. Austin

Production and Prices.—The world's production of copper in 1912 to 1915 inclusive showed an approximate figure in the neighborhood of 1,100,000 short tons per annum. This production increased in 1916 to 1,564,000 tons under the stimulus of high prices, and the year 1917 bade fair to equal this figure had it not been for delays in United States production due to labor strikes. During the summer extensive labor troubles developed in the copper-mining districts of the West, notably at Butte, Mont., and at Miami and Bisbee, Ariz. They were laid to I. W. W. activities, so that at some places in the Southwest members of the I. W. W. were deported from the mining camps. An understanding or compromise was brought about after some weeks and these districts again began producing in the fall (see also *Mining and Ore Dressing, supra;* and XV, *Labor*). It seems doubtful, however, that copper production in the United States will rise above 80 to 85 per cent. of the rate in 1916, except where open-pit mining has been done, in which a lower grade of labor than underground miners is used (see also XII, *Economic Conditions*).

The average copper price for 1916 was 27.2 cents per pound, rising by the end of the year to 33 and 34 cents. Actual costs of production in the porphyry copper mines in the first part of 1917 ranged from seven to 10 cents per pound of copper. In September the U. S. War Industries Board priced copper at 23½ cents with a stipulation that the wages then paid should not be reduced. This course of action appeared to meet general approval throughout the copper industry.

The Flotation Process.—The flotation process has revolutionized the metallurgy of copper, so that to-day, out of approximately 80 million tons of ore treated annually, 30 million tons are treated by flotation, 25 million tons by smelting, 25 million tons by gravity concentration, while leaching takes care of some two million tons. By gravity concentration the recovery has not exceeded 80 per cent. (often 66 to 70 per cent.), while by the use of flotation, either supplementing or replacing gravity concentration, the recovery has reached as high as 92 per cent. It is to be borne in mind, however, that when such concentrated material is subsequently smelted, as it must be, a further loss of some 10 per cent. must be expected. In concentration methods the great loss has been because of slimed mineral necessarily produced, and in gravity concentration, even with liberal use of tables and vanners, much slimed matter was washed away. Flotation, however, overcame this difficulty, the fine minerals being sought out and filmed by the oil. Each particular ore requires a special treatment, and the greatest success of flotation has been upon sulphides, though low oxidized ores bid fair to be treated by methods of selective flotation.

Mining and Metallurgical Practice.—In mining at Miami, Ariz., where there is an immense body of 2.7 per cent. ore, the caving system has been successfully introduced. The method consists essentially in undercutting the ore, which is taken out in horizontal slices, allowing the ore to cave and crush, and drawing it off through small inclined raises driven under the caved ore into main inclined raises which lead down to the haulage drift chutes. Extraction costs 60 cents per ton and the expense of timber and explosives is largely saved. In some of the porphyry mines, where the large ore body is near the surface, it has been found more economical to strip the overburden down to the ore body by means of steam shovels, removing the ore thus uncovered also by steam shovels and by open cut or quarrying methods. At the Utah Copper Co.'s property at Bingham, Utah, this is accomplished at a cost of 35 cents per ton of ore.

The Nevada Consolidated Mining Co. is mining 13,000 tons per day. Because of the increasing price of oil it has arranged to use powdered coal for its reverberatory smelting. These improvements will cost about $400,000. The Nevada mines, by state law, are now going on an eight-hour basis, though heretofore open-cut mining called for nine to 12 hours daily.

The Ray Consolidated Copper Co. of Arizona mined 3,400,000 tons in 1916, yielding 70,000,000 lb. of copper. Early in 1917 its ore reserves were computed at 93 million tons, containing 2.03 per cent. copper. The extraction, only 50 per cent. at the beginning of 1916, has been increased by installation of a flotation plant so that the extraction is 75 per cent.

At the Old Dominion works at Globe, Ariz., it was decided during the year to ship all flue dust and concentrates to Miami, where such fine material could be treated in a reverberatory furnace. As a result, at Globe two blast furnaces, treating coarse material only, do the work formerly performed by three, while furnace troubles have been largely eliminated.

The New Cornelia Copper Co.'s leaching plant at Ajo, Ariz., to treat 15,000 tons of ore daily, went into operation in June. The ore, after crushing to 0.25 in. mesh, is leached in 12 lead-lined concrete tanks, each holding 5,000 tons, with a three per cent. sulphuric-acid solution passing through the tanks in series at the rate of 8,000 gals. per minute, treating the oldest charge first. Thence the solution goes to 158 lead-lined electrolytic tanks, each 30 ft. long, 4 ft. wide and 5 ft. deep, furnished with lead anodes and copper cathodes. To remove the iron and alumina, which gradually builds up in the solution, a portion of the solution is diverted to scrap-iron tanks for removal of the remaining copper, the spent solution being then discarded. The leached ore is removed from the tanks by a Hulett 10-ton clam-shell bucket excavator, such as is used on the Great Lakes for unloading iron ore from the lake cargo boats. The spent ore is delivered into dump cars. This company has been the first to treat oxidized copper ore on a large scale by leaching.

The Utah Copper Co. completed in 1917 a leaching plant to handle 2,000 to 4,000 tons daily of its oxidized ore, hitherto removed as overburden and stacked. This ore, crushed to half-inch size, goes to concrete tanks lined with mastic. Here it is treated with acid solution, this being obtained from the sulphuric-acid plant erected by the American Smelting & Refining Co. at its copper-smelting plant near by. From the tanks the pregnant solution goes to Dorr thickeners, from which the clear overflow runs to scrap-iron launders for precipitation of the copper.

The two great copper properties in South America are those of the Chili Copper Co. and the Braden Copper Co.

The Chuquicamata deposit of the Chili Copper Co. has been developed by shafts, bore holes and other means to show 354 million tons of ore carrying 2.12 per cent. copper, with a probable further amount of as much more. The leaching method there developed will recover 90 per cent. of the metal when present crushing facilities have been so perfected that all the ore can be crushed to 0.3 in. or less. The leaching plant, now handling 10,000 tons of ore per day, is soon to be increased to handle 27,000 tons and eventually 40,000 to 50,000 tons. The expenditure, at first $15,000,000, will be eventually $55,000,000, only a small portion of the whole having gone to the purchase of the property.

The Braden deposit, the third largest deposit in the world, surrounds a volcanic vent in the form of a mantle. The grade of ore now developed averages 2.6 per cent. copper, the ore carrying an average of 1.68 per cent. copper. The cost of production at the plant is given as 8.53 cents and at New York as 12.22 cents, per pound.

Many people think that the smelting of oxidized ores at least is to be replaced by leaching methods, as at Ajo and at Chuquicamata. It remains a fact, however, that in the Katanga district of the southern Congo, oxidized ore is smelted to black copper in modern blast furnaces, so that the general principle applies only to the large low-grade ore bodies.

The Corocoro copper district of Bolivia is, next to the Lake Superior mines, the largest producer of native copper in the world, the output of the district being over 10,000 tons of ore annually. The surface ores to the depth of 50 ft. are oxidized; next, to a further depth of 300 ft., occurs chalcocite; below, this sulphide turns to native copper, a reversal of the usual experience. All these minerals are in sandstone. The ore, principally the chalcocite and native copper, is milled to a high-grade concentrate (*barilla*) and shipped out by rail to the port of Arica, Peru. The cost of producing and marketing the Corocoro *barilla* ranges from 6½ to 7½ cents per pound of copper.

GOLD AND SILVER

HERBERT A. MEGRAW

General Conditions.—Gold and silver production in 1917 has been appreciably affected by the course of political events which culminated in the entry of the United States into the war. Gold mining, as in the preceding years, has continued its efforts for high production, and has been stimulated to even greater efforts. The necessity for the metal as a basis of exchange has led to its production on the greatest possible scale. In the possession of the only large sources of gold production the Allies have one great and vital advantage over the Central Powers, whose territory produces practically no gold, their war costs resulting in a continuously increasing depreciation, mounting in direct proportion to the accumulated war cost, without possibility of replenishment. The Allies, on the contrary, have at their disposal the rich gold-producing areas of America, South Africa and Russia, so that current costs, however great, are being defrayed at least in part by the amount of new gold that is continuously coming to them.

With silver the situation has been radically different. Beginning the year at a low ebb, the industry seemed to be in a bad way, but it soon became apparent that there would be a radical improvement and change for the better in the amount of its production.

Gold Production.—In 1916 the gold production of the United States, including Porto Rico and the Philippines, amounted to about $93,000,000. This represented a decline of six to eight millions from the total of 1915. The production for 1917, as now forecast, may be expected to be not materially changed. It is true that additional efforts have been made to secure more gold, but, on the other hand, there has been a scarcity of labor, whereby gold mining has greatly suffered. The leading gold producing countries continue to be the Transvaal, United States, Australia and Russia.

Silver Production.—The silver production of the United States in 1916 was estimated at about 73,000,000 fine ounces, a decline of about 2,000,000 ounces from the production of 1915. For 1917, although production has been stimulated as much as possible, the drawbacks have been the same as in the case of gold, and no great increase can be looked for. The silver-producing industry of Mexico has done somewhat better than in the preceding year, but there has been no general rehabilitation such as to allow the country's production to approach normal figures. In Canada the rich camp of Cobalt has been producing a great quantity of silver, but it will not approach the totals of a few years back. Central and South America will be in about the same condition as it has been for the last few years.

Silver Prices.—The market price of silver has been subject during 1917 to wide fluctuations. Opening at New York with a quotation of 75⅝ cents per ounce, the price first declined slightly and then advanced, rising rather steadily, with a few fluctuations, up to September. During this month, in which silver opened at 90¾ cents and closed at 106½ cents, the average price being 100.739 cents, the maximum of 108½ cents was reached. From this point the price declined to 85¾ cents on Oct. 29, after which it rose in one jump to 90⅝ cents on Oct. 30.

To account for the change in silver prices, particularly the falling off from the record high price, there are several explanations. Among them may be noted the absence of the larger European purchasers of coinage, a decreased demand from India, government embargoes, the absence of buying from China, and the failure of a reported large sale in Mexican pesos to the United States. In addition, a large amount of reserve silver was drawn out of stock by the high prices, and supplied the market with all it could take. The sudden jump on Oct. 30 is accounted for by the general feeling that the decline in price had been too long sustained and carried too far. More licenses had been issued for imports into India and the demands of China were not easily met in Australia. It appears, besides, that there was something speculative in the sharp turn, which had doubtless embarrassed some London and New York operators who were not able to make deliveries as promptly as they were required.

In the future, the demands for coinage are pretty sure to continue large, and the requirements of the Far East will probably remain steady, if not increasing. The indications are for continued high prices, even if there is no further advance. (See also XIII, *Banking and Currency.*)

Metallurgy.—A review of the situation of gold and silver in 1917 brings out rather clearly the fact that metallurgy, as such, has had very little attention. There have been too many other factors to occupy the brain capacity of the leaders of the profession. With the entry of the United States into the war, this country became the principal reservoir for metals of all kinds for the Allies, and we have had to adopt the most stringent measures to increase production to maximum capacity.

The situation in regard to silver is considerably more interesting than that in regard to gold. At the beginning of the year it appeared that the silver output must decline somewhat, in continuance of the curve of decrease through 1916. Labor troubles had some influence, and most students of the situation expected that the supply of cyanide, largely used in the metallurgy of silver, would be such that the silver output might be diminished on that account. A study of the cyanide situation shows that normal consumption in gold and silver metallurgy is about 25,000 tons of cyanide yearly. Although many plants in Mexico had been closed for lack of cyanide, either through its scarcity or through lack of transportation facilities, it is safe to say that not a single plant of importance in the United States had to do so. The only concern manufacturing cyanide in that section has been able to supply its American customers, possibly at the expense of some Mexican users, with the result that the price did not advance seriously to large-scale users. While prices up to $1.50 or more per pound have been heard of in extreme cases, it is probable that not more than 30 cents on the average has been paid for cyanide formerly obtainable at 18 to 22 cents per pound. Since at most mills the cost of cyanide amounts to about 15 per cent. of the total cost of milling, it appears that the price advance is not particularly serious in view of the extreme value of the product.

The scarcity of cyanide became noticeable in the early part of the year, due largely to the advance in cost of raw materials, notably at Niagara Falls, where most of the power supply was cut off. This condition was changed, however, and the manufacturers of cyanide, increasing their plant capacity, were able to supply all calls in a reasonable way. Another factor tending to minimize the influence of the cyanide shortage was the spread of the application of flotation to silver metallurgy. Experiments have shown that some silver-sulphide ores may be treated by that process so as to produce silver quite as cheaply as by cyaniding, and in some cases this has been actually done. The chances are, particularly in view of the shortage of cyanide, that cyanidation will be largely replaced by the flotation process. Since the greater part of the silver output of the United States comes from copper, lead and zinc ores, in plants in which cyanide is not required, and since even the purely silver ores are treated in large part by smelting crude ores and concentrates, a shortage of cyanide could not be expected to make a great deal of difference.

LEAD

H. O. Hofman

Production.—Increase in the prices of lead and silver (see *Gold and Silver, supra*) has caused much activity during the year in the mining of known deposits and the reopening of abandoned mines, and in prospecting for new sources of supply. The imports of lead bullion from Mexico to be refined in the United States, which had fallen off greatly during the last few years owing to the unsettled conditions in Mexico, have increased considerably since the beginning of the year; the American smelteries at Monterey, Torreon and Cerralvo reopened during the year, and at its close the works at San Luis Potosi were about ready for operation.

Smelting.—The treatment of lead ores in the blast furnace was placed on a scientific basis in the Salt Valley in the early seventies by O. H. Hahn, A. Raht and A. Eilers; the first died in 1915, and in 1916 the other two founders of modern lead smelting passed away. They studied fundamental chemical principles and conducted their operations accordingly. The work of the present metallurgist lies in the adoption of mechanical handling of materials and consequent cheapening of operations. In the large plants characteristic of the United States, many improvements have been and are being made along this line.

Smelting of non-argentiferous lead ores in the lower Mississippi Valley is in a flourishing condition (Garlichs, *Bull. Am. Inst. Min. Eng.*, July, 1917, p. 1041). The ores mined contain Cu, 0.06; Pb, 5.7; SiO_2, 5.0; Fe, 41; Al_2O_3, 4.9; CaO, 25.5; MgO, 14.2; Zn, 0.8; S, 2.0 per cent., and Ag, 0.12 oz. per ton. They are enriched by crushing and washing, and furnish products with 73-80, 65-68 and 45-58 per cent. lead which go to the smelteries. Concentrates with over 70 per cent. lead are smelted mainly in the ore hearth; those of a lower grade are blast-roasted and then treated in the blast furnace. The Newnam ore hearth (*A. Y. B.*, 1915, p. 499), which originated at the works of the St. Louis Smelting and Refining Co. at Collinsville, Ill., has been introduced at several other plants. The blast-furnace practice does not differ from that of the rest of the country. Soft Missouri lead contains Ag, 0.0080 (2.4 oz. per ton); As, trace; Sb, 0.0030; Bi, trace; Cu, 0.0800; Fe, 0.0015; Zn, trace; Ni and Co, 0.0080; Pb, 99.8995 per cent. At two smelteries this lead is desilverized by means of the Parkes process with the object of recovering the one or two ounces of silver per ton and of improving the character of the lead, which thus commands a higher price. Desilverized Missouri lead contains Ag, 0.0005; As, trace; Sb, 0.0020; Bi, trace; Cu, 0.0002; Fe, 0.0004; Zn, 0.0004; Pb, 99.9965 per cent.

The rise in price of labor and materials has had its influence on the cost of smelting lead ores and of refining lead bullion. Thus, at the works of the American Smelting and Refining Co., Perth Amboy, N. J., the prices paid for labor have increased from 20 to 50 per cent.; with the additional pay efficiency has decreased from 25 to 30 per cent (Alexander, *Eng. and Min. Jour.*, ciii, 219). The following data show the percentage increase in the cost of materials: fire brick, 50; common brick, 30; magnesite brick, 300; iron, 45; steel, 80; castings, 45; crucibles, 145; retorts, 265; nitric acid, 35; sulphuric acid, 30; zinc, 170. The quality of materials often has deteriorated; thus, crucibles and retorts last only half the number of charges which they formerly stood.

The treatment of mixed galena and blende ores is receiving much attention since the electrodeposition of zinc has become an economic success. These ores are subjected to an oxidizing roast and leached with sulphuric acid; the solution is purified and electrolyzed, and the insoluble residue goes to the lead blast furnace. Difficulties have been encountered in obtaining a satisfactory extraction of zinc from the roasted ore. They are caused by the manner in which the ore is roasted, as under certain conditions of temperature, time and admission of air, the zinc oxide combines with ferric oxide in a compound or mixture which is insoluble in sulphuric acid. It is thus not only lost, but interferes with the subsequent smelting of the residue (Hamilton, *Bull. Can. Min. Inst.*, July, 1917, p. 615).

The gases which pass off into the open from lead smelteries carry with them sulphurous compounds, metal vapors and dust. The last two are recovered satisfactorily by filtering or electric precipitation. The handling of sulphurous gases is receiving much attention. Experiments with the wet thiogen process carried on under the auspices of the Bureau of Mines appear to be promising to a certain extent, as the process aims to recover the sulphur from the gases (A. E. Wells, *Bull. Bur. Mines*, 133, 1917).

Leaching.—The lixiviation of lead ores has not given so far much hope for success. The only process in operation is the one mentioned above, which aims to remove the zinc present and thus render the lead residue smeltable. The experimental station of the Bureau of Mines in Salt Lake City, Utah, has undertaken a study of the treatment of the low-grade oxide ores of that state (Ralston, Williams, Udy and Holt, *Bull. Am. Inst. Min. Eng.*, Aug., 1917, p. 1205) and finds that two methods are applicable. One is to leach the ore with a saturated salt solution acidified with sulphuric acid, followed either by electrolytic or lime precipitation; the other is to give the ore a chloridizing roast above 800°C., volatilize the lead chloride, and collect the fume in a Cottrell precipitator. Work of this character has been carried out at the Bunker Hill smeltery, Kellogg, Idaho (Larson, *Min. and Sci. Press*, Aug. 25, 1917).

Refining.—It has been known for years that the works of the American Smelting and Refining Co. at Omaha, Neb., had put into operation the Tredinnick modification of the Pattinson process. Details, however, were not made public until the process had been abandoned. These are now available in the model paper by E. Newnam (*Bull. Am. Inst. Min. Eng.*, May, 1917, p. 749). The present practice of the Omaha plant is to desilverize by means of the Parkes process lead-bullion charges which will furnish a refined lead with less than .05 per cent. bismuth, the dividing line between corroding and non-corroding lead as regards this metal, and to treat by the Bettes electrolytic process lead bullion too rich in bismuth for the Parkes process. The production in 1917 of refined lead from domestic and foreign ores is estimated as being 599,000 tons.

ZINC

W. R. INGALLS

Commercial Conditions.—During 1917 the zinc market definitely settled upon a normal basis, or, rather, returned to normal conditions but on an inflated basis. By normal conditions is meant the existence of an accumulation of unsold stock, without which no market possesses a balance wheel. Zinc was the first of the major metals to regain such a balance wheel, and throughout 1917 its influence was exhibited. Stocks began to accumulate from the very beginning, when the market stood at 9¼ cents at St. Louis. For a while the situation was not appreciated, owing to the freight congestion during midwinter, which caused about three times the normal quantity of zinc to accumulate on railway cars in transit. During this period there were some fitful advances in price, which rose as high as 10½ cents, but as soon as the railway congestion was relieved and the stocks thereby accumulated were released, manufacturers were amply supplied, stocks then began to accumulate at the smelteries, and no smelter any longer had any doubt of what was happening. From that time onward the zinc market was controlled by the views of persons who were carrying stocks and without any reference to cost of production. The price for the metal declined below the cost of production, in many cases curtailment was ordered, and production, which in the spring had reached a maximum of about 65,000 tons per month, was reduced at midyear to about 55,000 tons per month. At midyear the price still stood at nine cents, but later it declined to as low as 7½ cents, and during most of the third quarter ranged between 7½ and 8½ cents. The price-fixing policy of the Government did not need to extend to zinc, for there was no question of the ability of the Government to buy it more cheaply than it could be made by many producers whose output was needed; yet it seems that the Government is determined to put its hand on this industry.

Smelting.—With the relaxation from the strenuousness of 1915-16 zinc smelters were able to devote more attention to improvement in technical details. More study was given to roasting furnaces, especially to develop a satisfactory mechanically raked muffle furnace. Although a universal furnace of this type has not yet been designed, it appears that we have in the Spirlet, Ridge, Wedge and Heberlein types a group of furnaces on which reasonable reliance may be placed. The necessity for increased economy in fuel and labor and utilization of the sulphur content of ore will create during the next few years a strong demand for furnaces of these types.

In distillation furnaces and the accessories to the distillery there have been no noteworthy improvements so far as ore smelting is concerned. In the refining of crude spelter, however, for the supply of high-grade metal, for which a great demand continues to exist, the makeshift of redistilling in the retorts of an ordinary ore furnace, modified only by changing the inclination of the retorts and substituting a special condenser, has been replaced in part by furnaces especially designed for redistillation, like that of de Saulles. Nevertheless, in this furnace the general lines of the ore-smelting furnace are adhered to. Refiners in the eastern part of the country, on the other hand, use entirely different furnaces, which are furnished with large, bottle-shaped, graphite retorts.

The electrothermic distillation of either ore or spelter remains about *in statu quo.* It is practiced on a fairly large scale in Sweden and Norway, but has failed to make headway in the United States, one reason undoubtedly being the non-existence of hydraulic power of requisite cheapness.

Perhaps the most noteworthy feature in the pyrometallurgy of zinc in 1917 was the increased attention to the manufacture of zinc oxide direct from ore. This is an old process, but heretofore its use has been confined mainly to the New Jersey Zinc Co. and its subsidiaries, with only one or two small competitors. A few years ago some smelters in Oklahoma conceived the idea of using this method as a means of burning out of their distillation residues some of the remaining zinc and recovering the latter as impure oxide which is returned to the distillation furnace. This practice, having been found profitable, has extended considerably. Moreover, as experience with the process was gained and it was found to be simple, other producers have applied it to the concentration of low-grade calamines, and several concerns have gone into the process not only as a means of concentration but also for the manufacture of zinc pigment, the latter requiring more skill than simple burning of the ore to obtain an impure oxide. The furnace used for this purpose is the well-known Wetherill furnace, of which there are two types, the eastern and western. The eastern type is used at the great works of the New Jersey Zinc Co. at Palmerton, Pa., but almost everywhere else the western type is the favorite; without doubt it is more nearly a universal furnace, *i. e.*, one that is good for all ores, than the other.

The residue remaining after lixiviation preliminary to electrolysis is apt to be high enough in zinc to make it worth while to extract it. This also may be done by burning in Wetherill furnaces, but at Great Falls, Mont., Frederick Laist had the boldness to try smelting the residue in one of the large Anaconda reverberatories, collecting copper and the precious metals in a matte and burning off the zinc and lead as a fume in one operation. There have been difficulties in this process but on the whole it may be considered to be metallurgically successful. In all cases the fume is collected by filtering through muslin bags. One or two works have tried a mechanical filter, operating on the same principle, but it seems still to be lacking. Mechanical shaking of the bags in the standard baghouse continues to be the only correct system in any modern plant.

Electrometallurgy.—The hydrometallurgical-electrometallurgical extraction of zinc from ore is now well beyond the infant stage, both at Great Falls, Mont., and at Trail, B. C., and a great deal of zinc is being produced by this method. The troubles are well understood and are easily corrected. During 1917 several smaller electrolytic plants were put in operation in the United States; one, the Judge, at Park City, Utah, of considerable size. The Judge plant is noteworthy as being the first installation, according to the modern process, with rotating cathodes. Theoretically, rotating cathodes have certain important advantages over stationary. At Park City, however, it proved that the difficulties outweighed the advantages, and the rotating cathodes were replaced by stationary. The construction of an important electrolytic plant has been going on in Tasmania during 1917 and it should be ready to begin production before midwinter. (See also XXIII, *Electrochemistry.*)

STATISTICS OF MINERAL PRODUCTION

WORLD'S PRINCIPAL MINERAL PRODUCTS, 1900–16

(In metric tons)

(*The Mineral Industry*)

	1900	1905	1910	1914	1915	1916
Aluminium	7,339	16,810	....	86,300	86,240	132,500
Asphalt	322,896	309,629	367,626	....	....	....
Coal	765,138,033	928,049,163	1,151,239,643	1,210,000,000[1]	115,200,000[1]	....
Copper	491,435	698,931	877,494	934,888	1,082,376	1,419,069
Lead	849,168	988,727	1,093,043	....	....	....
Petroleum[2]	149,132,116	215,361,296	327,615,603	399,264,168	429,119,688	....
Phosphate rock	2,795,149	3,845,552	5,594,856	....	....	....
Pig iron	39,599,457	54,034,783	66,210,694	62,844,609	64,515,927	....
Steel	28,727,239	43,900,648	58,656,312	....	....	....
Tin	82,117	100,795	115,759	111,206	112,819	112,141
Zinc	479,128	653,565	824,973	....	....	....

[1] Approximate. [2] Barrels of 42 gal.

MINERAL PRODUCTION BY PRINCIPAL COUNTRIES, 1900-16

(In metric tons)

(*The Mineral Industry*)

	1900	1905	1910	1914	1915	1916
COAL						
Australasia	7,599,269	9,227,129	12,132,200	15,750,869[1]	....	....
Austria-Hungary	39,107,786	41,952,008	47,943,109	53,396,400[1]	52,679,712[1]	50,801,602[1]
Belgium	23,462,817	21,775,280	23,916,560	19,000,000[1]	15,691,465[1]	19,900,000[1]
France	33,404,298	35,218,000	38,349,942	33,360,885[1]	19,908,892[1]	22,000,000[1]
Germany	149,788,256	173,810,669	222,375,076	270,594,952[1]	259,139,786[1]	....
Japan	7,370,667	11,955,946	15,681,324	21,700,572[1]	22,596,750[1]	22,189,969[1]
Russia	16,156,055	18,727,766	24,026,000	36,414,560[1]	31,158,400[1]	128,962,724[1]
United Kingdom	228,772,886	239,906,999	268,676,528	297,698,617[1]	283,570,560[1]	287,110,153[1]
United States	243,414,164	351,120,625	445,816,040	513,525,477[1]	517,619,487[1]	597,474,000[1]
COPPER						
Africa	6,828	7,442	15,449	24,135	27,000	50,000[2]
Australasia	23,368	34,483	40,962	37,592	32,512	35,000[2]
Austria-Hungary	1,377	1,346	2,276	3,310	....	....
Bolivia	2,134	2,032	2,540	2,743	3,000	4,000[2]
Canada	8,595	21,595	23,810	34,027	47,202	53,263
Chile	26,016	29,126	38,346	40,876	52,081	71,430
Cuba	....	....	3,538	6,251	8,836	9,311
Germany	20,635	22,492	25,105	30,480	35,000[2]	35,000[2]
Italy	2,797	2,997	3,272	2,410	940	1,000[2]
Japan	28,285	35,944	50,703	68,058	75,415	81,280
Mexico	22,473	65,449	62,504	36,337	30,969	55,169
Norway	3,998	6,406	10,592	11,000	32,410	35,000
Peru	8,353	12,213	27,375	23,647	16,000[2]	41,625
Russia	8,128	9,515	22,670	31,938	35,000[2]	16,000[2]
Spain-Portugal	53,718	45,527	51,080	37,099	....	....
Sweden	457	1,385	2,032	4,692	4,561	....
United States	274,933	397,069	492,720	525,529	646,212	880,750
LEAD						
Australasia	87,100	106,418	105,897	....	....	....
Austria	10,650	12,968	15,476	....	....	....
Belgium	16,365	22,885	40,715	....	....	....
Canada	28,648	25,391	14,967	16,487	21,009	18,866
France	15,210	24,100	20,226	....	....	....
Germany	121,513	152,590	159,851	....	....	....
Greece	16,396	13,729	16,710	20,684	11,595	....
Italy	23,673	19,097	14,495	20,464	21,812	....
Mexico	63,827	101,196	120,662	....	....	....
Spain	172,530	185,693	190,523	....	190,000[2]	....
United Kingdom	35,500	28,494	30,799	....	....	....
United States	253,204	290,472	353,186	485,011	487,177	540,892
PETROLEUM[3]						
Dutch East Indies	2,253,355	7,849,896	11,030,620	12,705,208[4]	12,386,808[4]	....
Galicia	2,346,505	5,765,317	12,673,688	5,033,350[2]	4,158,899	....
India	1,078,264	4,137,098	6,137,990	6,190,476	6,833,333	....
Rumania	1,628,535	4,420,987	9,723,806	12,826,579	13,229,913	....
Russia	75,779,417	54,960,270	70,336,574	67,020,522	68,548,062	72,360,000
United States	63,620,529	134,717,580	209,557,248	265,762,535	281,104,104	292,300,000
PIG IRON						
Austria-Hungary	1,311,949	1,372,300	2,010,000	2,020,000	1,960,000	....
Belgium	1,018,561	1,310,290	1,852,090	1,560,000	....	....
Canada	87,594	475,491	726,471	710,481	828,920	1,060,787
France	2,714,298	3,077,000	4,032,459	5,025,000	4,750,000	....
Germany	8,520,540	10,987,623	14,793,325	14,389,547	11,790,199	....
Italy	23,990	31,300	215,000	385,114	377,510	454,923
Russia	2,933,786	2,125,000	3,042,046	4,261,008	3,696,560	....
Spain	91,186	383,100	367,000	435,000	419,000	....
Sweden	526,868	531,200	604,300	635,100	767,600	....
United Kingdom	9,003,046	9,746,221	10,380,723	9,005,898	8,793,659	9,047,983
United States	14,009,870	23,340,258	27,636,687	23,721,111	30,414,816	40,092,043

[1] Short tons. [2] Estimated. [3] Barrels of 42 gal. [4] Includes British Borneo.

MINERAL PRODUCTION BY PRINCIPAL COUNTRIES, 1900–16—*Continued*

	1900	1905	1910	1914	1915	1916
STEEL						
Austria-Hungary	1,145,654	1,188,000	2,188,371	2,190,759	2,686,226	....
Belgium	655,199	1,023,500	1,449,500	....	....	....
Canada	23,954	403,449	835,478	751,738	918,926	1,319,187
France	1,565,164	2,210,284	3,506,497	....	....	....
Germany	6,645,869	10,066,553	13,698,638	15,619,719	13,237,646	....
Italy	115,887	117,300	635,000	....	....	....
Russia	2,217,752	2,208,000	3,479,000	....	4,018,000	....
Spain	144,355	264,970	316,301	....	....	....
Sweden	300,536	340,000	468,600	500,600	588,800	....
United Kingdom	5,130,800	5,812,282	6,374,481	7,918,243	8,687,670	9,396,292
United States	10,382,069	20,354,291	26,512,437	23,904,914	32,686,887	43,486,574
ZINC						
Austria	6,742	9,204	13,305	....	....	....
Belgium	119,315	142,555	181,745	....	....	....
France	36,305	43,200	51,527	....	....	....
Germany	155,799	198,208	227,754	....	....	....
Holland	6,845	13,550	20,975	....	....	....
Russia	5,963	7,520	8,128	....	....	....
United Kingdom	30,207	50,125	63,587	....	....	....
United States	111,794	183,014	251,348	....	....	....

WORLD'S PRODUCTION AND COINAGE OF PRECIOUS METALS, 1851–1916

(*Report of the Director of the Mint*)

PERIOD	GOLD		SILVER		Commercial Ratio of Silver to Gold
	Fine Ounces	Value	Fine Ounces	Coining Value	
PRODUCTION:					
1851–1855 (average)	6,410,324	$132,513,000	28,488,597	$36,824,000	15.41
1856–1860 (average)	6,486,262	134,083,000	29,095,428	37,618,000	15.30
1861–1865 (average)	5,949,582	122,989,000	35,401,972	45,772,000	15.40
1866–1870 (average)	6,270,086	129,614,000	43,051,583	55,663,000	15.55
1871–1875 (average)	5,591,014	115,577,000	63,317,014	81,864,000	15.98
1876–1880 (average)	5,543,110	114,586,000	78,775,602	101,851,000	17.86
1881–1885 (average)	4,794,755	99,116,000	92,003,944	118,955,000	18.62
1886–1890 (average)	5,461,282	112,895,000	108,911,431	140,815,000	21.14
1891–1895 (average)	7,882,565	162,947,000	157,581,331	203,742,000	27.06
1896–1900 (average)	12,446,939	257,301,100	165,693,304	214,229,700	33.50
1901–1905 (average)	15,606,730	322,619,820	167,995,408	217,206,180	36.30
1906	19,471,080	402,503,000	165.054,497	213,403,800	30.54
1907	19,977,260	412,966,600	184,206,984	238,166,600	31.24
1908	21,422,244	442,476,900	203,131,404	262,634,500	38.64
1909	21,965,111	454,059,100	212,149,023	274,293,700	39.74
1910	22,022,180	455,239,100	221,715,763	286,662,700	38.22
1911	22,348,313	461,939,700	226,192,923	292,451,500	38.33
1912	22,549,335	466,136,100	224,310,654	261,402,300	33.62
1913	22,249,596	459,941,100	223,907,843	135,246,400	34.19
1914	22,039,598	455,676,600	211,103,377	116,719,200	37.49
1915	22,758,808	470,466,214	179,753,978	93,227,934	39.84
1916	....	....	....	....	....
COINAGE:					
1873–1880 (average)	8,665,153	179,124,608	91,460,904	118,252,482	....
1881–1890 (average)	5,898,643	121,935,781	97,881,838	126,554,296	....
1891–1900 (average)	13,707,461	283,358,375	116,010,359	149,993,192	....
1901–1905 (average)	13,645,423	282,075,960	137,801,324	178,852,964	....
1906	17,721,058	366,326,788	120,339,501	155,590,466	....
1907	19,921,014	411,803,902	171,561,490	221,816,867	....
1908	15,828,573	327,205,649	151,352,824	195,688,499	....
1909	15,153,116	313,242,714	87,728,951	113,427,331	....
1910	22,004,542	454,951,834	78,786,842	108,934,541	....
1911	18,002,444	372,143,555	117,237,838	148,156,282	....
1912	17,447,478	360,671,382	161,763,415	171,293,019	....
1913	15,494,784	320,305,619	155,497,316	155,265,702	....
1914	5,081,928	248,585,071	192,501,238	106,476,285	....
1915	....	183,518,602	194,017,162	100,679,385	....
1916	....	....	....	....	....

MINERAL PRODUCTION OF THE UNITED STATES, 1900–16

(*United States Geological Survey*)

	1900	1905	1910	1914	1915	1916
METALS:						
Iron ore.....long tons	....	42,526,133	56,889,734	39,714,280	55,493,100	77,870,553
Iron, pig....long tons	13,789,242	22,992,380	27,303,567	22,263,263	30,384,486	39,126,324
Steel........long tons	10,188,329	20,023,947	26,094,919	23,513,030	32,151,036	....
Silver.....troy ounces	57,647,000	56,101,600	57,137,900	72,455,100	74,961,075	74,414,802
Gold......troy ounces	3,829,897	4,265,742	4,657,018	4,572,976	4,887,604	4,479,056
Copper.......pounds	606,117,166	888,784,267	1,080,159,509	1,150,137,192	1,388,009,527	1,927,850,548
Lead.......short tons	270,824	302,000	372,227	512,794	507,026	552,228
Zinc........short tons	123,886	203,849	252,479	343,418	458,135	563,451
Quicksilver......flasks	28,317	30,451	20,601	16.548	21,033	29,932
Aluminium....pounds	a7,150,000	11,347,000	47,734,000	79,129,000	99,806,000	....
Antimonial lead..sh.t.	....	....	14,069	16,667	23,224	24,038
Platinum..troy ounces	400	318	773	6,324	8,665	28,088
NON-METALS:						
Fuels:						
Bitum. coal b....sh.t.	212,316,112	315,062,785	417,111,142	422,703,970	442,624,426	502,519,682
Penn. anthracite .l. t.	51,221,353	69,339,152	75,433,246	81,090,631	79,459,876	78,195,083
Coke......short tons	....	32,231,129	41,708,810	34,555,914	41,581,150	54,533,585
Petroleum....barrels	63,620,529	134,717,580	209,557,248	265,762,535	281,104,104	300,767,158
Struct'l Materials:						
Cement......barrels	17,231,150	40,102,308	77,785,141	87,257,552	87,685,222	95,394,433
Lime......short tons	....	2,984,100	3,505,954	3,380,928	3,622,810	4,083,803
Sand & gravel...sh.t.	....	23,204,967	67,949,347	77,662,086	74,719,259	87,073,415
Abrasive Materials:						
Corundum and emery.....short tons	4,305	2,126	1,028	485	3,063	15,282
Garnet....short tons	3,185	5,050	3,814	4,231	4,301	6,171
Pumice....short tons	....	1,832	23,271	27,591	27,708	33,320
Chemical Materials:						
Arsenious oxide...lb.	....	1,507,386	2,994,000	9,340,000	10,996,000	11,972,000
Borax (crude)...sh.t.	25,837	46,334	42,357	62,400	67,003	103,525
Bromine.....pounds	521,444	1,192,758	245,437	576,991	855,857	688,260
Fluorspar....sh. tons	18,450	57,385	69,427	95,116	136,941	155,735
Gypsum...short tons	594,462	1,043,202	2,379,057	2,476,465	2,447,611	2,757,730
Phosphate rock...l.t.	1,491,216	1,947,190	2,654,988	2,734,043	1,835,667	1,982,385
Pyrite.....long tons	204,615	253,000	241,612	336,662	394,124	423,556
Sulphur....long tons	3,525	181,677	255,534	327,634	....	....
Salt..........barrels	20,869,342	25,966,122	30,305,656	34,804,683	38,231,496	45,431,349
Pigments:						
Barytes...short tons	67,680	48,235	42,975	52,747	108,547	221,952
Mineral paints..sh.t.	57,426	63,521	85,304	...173,557	198,825	135,606
Zinc oxide......sh.t.	48,840	68,603	58,481			
Miscellaneous:						
Asbestos...short tons	1,054	3,109	3,693	1,247	1,731	1,479
Asphalt...short tons	54,389	115,267	260,080	440,571	740,254	786,811
Bauxite....long tons	23,184	48,129	148,932	219,318	297,041	425,100
Chromic iron ore....long tons	140	22	205	591	3,281	47,035
Feldspar...short tons	24,821	35,419	81,102	135,419	105,118	132,681
Fuller's earth...sh.t.	9,698	25,178	32,822	40,981	47,901	67,822
Glass sand......sh.t.	....	1,060,334	1,461,089	1,619,649	1,884,044	2,018,317
Graphite....sh. tons	3,365	24,986	4,202	4,335	4,718	8,088
Magnesite...sh. tons	2,252	3,933	12,443	11,293	30,499	154,974
Manganese ore...l.t.	11,771	4,118	2,258	2,635	8,708	26,994
Manganiferous ore long tons	....	....	61,101	98,265	196,640	548,803
Mica.........pounds	11,450,283	3,176,875	10,606,190	8,016,933	557,780	870,296
Mineral waters gallons sold	45,276,995	46,544,361	62,030,125	54,358,466	52,113,503	55,928,461
Quartz....short tons	32,495	51,145	63,577	153,401	112,575	....
Talc and soapstone short tons	27,943	40,134	79,006	86,221	98,677	119,725
Talc, fibrous....sh.t.	63,500	56,500	71,710	86,075	88,214	93,236
Thorium minerals (monazite) and zircon .....pounds	908,006	1,352,418	99,301	....	....	....
Tungsten ore ...sh.t.	40	803	1,821	990	2,332	5,200

a Consumption. b Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

XVII. THE MINERAL INDUSTRIES

VALUE OF MINERAL PRODUCTS OF THE UNITED STATES, 1900–16

(*United States Geological Survey*)

	1900	1905	1910	1914	1915	1916
METALS:						
Iron ore	$66,590,504	$75,165,604	$140,735,607	$71,905,079	$101,288,984	$181,902,277
Iron, pig (*a*)	259,944,000	382,450,000	412,162,486	298,777,429	401,409,604	663,478,118
Silver	35,741,100	34,221,976	30,854,500	40,067,700	37,397,300	48,953,000
Gold	79,171,000	88,180,700	96,269,100	94,531,800	101,035,700	92,590,300
Copper	98,494,039	137,761,561	137,180,257	152,968,246	242,902,000	474,288,000
Lead	23,561,688	28,690,000	32,755,976	39,998,000	47,660,000	76,207,000
Zinc	10,654,196	24,054,182	27,267,732	35,029,000	113,617,000	151,005,000
Quicksilver	1,302,586	1,103,120	958,153	811,680	1,826,912	2,576,547
Aluminium	1,920,000	3,246,300	8,955,700	14,522,700	16,280,000	33,900,000
Antimonial lead	....	....	1,338,090	1,572,167	3,665,736	4,463,582
Platinum	2,500	5,320	25,277	280,885	478,688	2,301,762
NON-METALS: (*a*)						
Fuels:						
Bituminous coal	220,930,313	334,658,294	469,281,719	493,309,244	502,037,688	665,116,077
Penna. anthracite	85,757,851	141,879,000	160,275,302	188,181,399	184,653,498	202,009,561
Coke	....	72,476,196	99,742,701	88,334,217	105,503,868	170,841,197
Petroleum	75,989,313	84,157,399	127,899,688	214,125,215	179,462,890	330,899,868
Natural gas	....	41,562,855	70,756,158	94,115,524	101,312,381	120,227,468
Structural Materials:						
Clay products	96,212,345	149,697,188	170,115,974	164,986,983	163,120,232	207,260,091
Cement	13,283,581	35,931,533	68,752,092	80,533,203	75,155,102	104,689,090
Lime	6,797,496	10,941,680	14,088,039	13,268,938	14,424,036	18,618,816
Sand and gravel	....	11,223,645	21,037,630	22,278,969	21,514,977	27,852,198
Stone	36,970,777	63,798,748	76,520,584	77,544,103	74,595,352	79,041,699
Abrasive Materials:						
Grindstones	710,026	777,606	796,294	689,344	648,479	766,140
Corundum and emery	102,715	61,464	15,077	2,425	31,131	123,901
Garnet	123,475	148,095	113,574	145,510	139,584	208,850
Pumice	....	5,540	94,943	59,172	63,185	82,263
Oilstones, etc.	174,087	244,546	228,694	167,948	115,175	154,573
Chemical Materials:						
Arsenious oxide	....	32,210	52,305	313,147	302,116	555,186
Borax (crude)	1,018,251	1,019,154	1,201,842	1,464,400	1,677,099	2,409,459
Bromine	140,790	178,914	31,684	203,094	856,307	922,225
Fluorspar	94,500	362,488	430,196	570,041	764,475	922,654
Gypsum	1,627,203	3,029,227	6,523,029	6,895,989	6,596,893	7,959,032
Phosphate rock	5,359,248	6,763,403	10,917,000	9,608,041	5,413,449	5,896,993
Pyrite	749,991	938,492	977,978	1,283,346	1,674,933	1,965,702
Sulphur	88,100	3,706,560	4,605,112	5,954,236	....	....
Salt	6,944,603	6,095,922	7,900,344	10,197,417	11,747,686	13,645,947
Pigments:						
Barytes (crude)	188,089	148,803	121,746	155,647	381,032	1,011,232
Mineral paints	644,089	1,697,130	2,141,654	}10,612,100	15,514,059	23,515,803
Zinc oxide	3,667,210	5,520,240	5,238,945			
Miscellaneous:						
Asbestos	16,310	42,975	68,357	18,965	76,952	448,214
Asphalt	415,958	758,153	3,080,670	3,659,092	5,242,073	7,102,132
Bauxite	89,676	240,292	716,258	1,069,194	1,514,834	2,296,400
Chromic iron ore	1,400	375	2,729	8,715	36,744	726,243
Feldspar	180,971	226,157	502,452	629,873	489,223	702,278
Fuller's earth	67,535	214,497	293,709	403,646	489,219	706,951
Glass sand	....	1,107,730	1,516,711	1,568,030	1,606,640	1,957,797
Graphite	197,579	318,211	335,443	324,118	429,631	935,471
Magnesite	19,333	15,221	74,658	124,223	271,491	1,393,693
Manganese ore	100,289	36,214	22,802	27,377	108,049	627,417
Manganiferous ore	....	....	186,765	218,497	822,216	12,005,491
Mica	147,960	178,588	337,097	329,956	428,769	594,391
Mineral waters	5,791,805	6,491,251	6,357,590	4,892,328	5,138,794	5,735,035
Quartz	86,351	104,109	193,757	360,502	273,553	....
Talc & soapstone	383,541	637,062	684,213	1,043,801	1,026,739	1,292,293
Talc, fibrous	499,500	445,000	728,180	821,286	864,843	961,510
Thorium minerals (monazite), and zircon	48,805	163,908	12,006	....	....	....
Tungsten ore	11,040	268,676	807,307	435,000	4,100,000	....

(*a*) "Spot" value, that is, value at the point of production.

XVII. THE MINERAL INDUSTRIES

MINERAL PRODUCTION BY STATES, 1900–15

(*United States Geological Survey*)

	1900	1905	1910	1914	1915	1916
METALS:						
COPPER (pounds):						
Alaska	....	4,900,866	4,311,026	24,985,847	70,695,286	113,823,064
Arizona	118,317,764	226,854,461	297,250,538	382,449,922	432,467,690	694,847,307
California	28,511,225	16,697,489	45,760,200	29,784,173	37,658,444	43,400,876
Colorado	7,826,949	9,404,830	9,307,497	7,316,066	7,272,178	9,536,193
Idaho	290,162	7,321,585	6,877,515	5,875,205	6,217,728	7,248,794
Michigan	145,461,498	230,287,992	221,462,984	158,009,748	238,956,410	267,794,531
Montana	270,738,489	314,750,620	283,078,516	236,805,845	268,263,040	352,137,768
Nevada	407,535	413,292	64,494,640	60,122,904	67,757,322	100,816,724
New Mexico	4,169,400	5,334,192	3,784,609	64,204,703	62,817,234	79,863,439
Tennessee	....	....	16,691,777	18,661,112	18,205,308	14,556,278
Utah	18,354,726	54,083,506	125,185,455	160,589,660	175,177,695	232,335,950
GOLD (fine ounces):						
Alaska	395,271	722,026	787,148	800,471	808,346	780,037
Arizona	202,856	130,192	165,113	221,020	220,392	197,989
California	765,109	928,660	988,854	1,028,061	1,090,731	1,063,302
Colorado	1,394,622	1,243,291	992,967	962,779	1,089,928	928,075
Idaho	83,433	52,032	50,113	57,431	56,628	51,195
Montana	227,266	236,520	179,974	200,446	240,825	209,386
Nevada	97,050	259,246	913,015	558,064	574,874	438,505
New Mexico	40,292	12,858	23,084	58,974	70,632	65,306
Oregon	81,980	60,222	32,960	76,887	90,321	91,985
South Dakota	298,842	334,460	260,266	354,782	358,145	361,444
Utah	192,155	248,691	208,627	163,362	189,045	186,679
Washington	34,743	17,899	38,992	28,435	22,330	28,087
IRON ORE (long tons):						
Alabama	2,759,247	3,782,831	4,801,275	4,838,959	5,309,354	6,747,901
Michigan	9,926,727	10,885,902	13,303,906	10,796,200	12,514,516	18,071,016
Minnesota	9,834,399	21,735,182	31,966,769	21,946,901	33,464,660	44,585,422
New Jersey	344,247	526,271	521,832	350,135	415,234	493.004
New York	441,485	1,139,937	1,287,209	785,377	998,845	1,342,507
Ohio	....	....	....	5,138	3,455	1,800
Pennsylvania	877,684	808,717	739,799	406,326	363,309	559,431
Tennessee	594,171	734,770	732,247	330,214	284,185	455,834
Virginia	*a*921,821	....	903,377	378,520	348,042	440,492
Wisconsin	746,105	859,283	1,149,551	886,512	1,095,388	1,304,518
IRON, PIG (long tons):						
Alabama	1,184,337	1,604,062	1,939,147	1,826,929	2,049,453	2,049,453
Illinois	1,363,383	2,034,483	2,075,646	1,847,451	2,447,220	3,922,512
New York	292,827	1,198,068	1,938,407	*c*1,559,864	*c*2,104,780	*c*2,352,535
Ohio	2,470,910	4,586,110	5,752,111	5,283,426	6,912,962	8,602,895
Pennsylvania	6,365,935	10,579,127	11,272,323	9,733,369	12,790,668	16,506,284
Tennessee	362,190	372,692	397,569	216,738	177,729	355,374
Virginia	490,617	510,210	444,976	271,228	251,346	399,885
LEAD (short tons):						
Colorado	82,137	56,638	38,542	41,198	32,352	33,046
Idaho	85,444	99,027	109,951	177,827	160,680	170,059
Missouri	....	*b*104,058	161,659	194,275	195,634	218,253
Utah	48,044	44,996	60,605	88,976	106,105	111,789
Wisconsin	....	....	3,909	1,818	2,632	3,121
SILVER (fine ounces):						
Arizona	2,995,500	2,605,700	2,655,700	4,439,500	5,665,672	6,680,252
California	941,400	1,082,000	1,791,600	2,020,800	1,689,924	1,936,910
Colorado	20,483,900	12,942,800	8,523,000	8,804,400	7,199,745	7,551,761
Idaho	6,429,100	8,125,600	7,027,000	12,573,800	13,042,466	11,570,399
Michigan	102,000	253,000	262,200	415,500	581,874	759,068
Montana	14,195,400	13,454,700	12,282,900	12,536,700	14,423,173	14,046,054
Nevada	1,358,700	5,863,500	12,366,000	15,877,200	14,453,085	13,682,067
New Mexico	434,300	354,900	779,000	1,771,300	2,337,064	1,729,917
South Dakota	536,200	179,000	120,600	179,800	197,569	210,100
Texas	477,400	417,200	364,400	574,700	724,580	664,319
Utah	9,267,600	10,319,800	10,445,900	11,722,000	13,073,471	13,545,802
Washington	224,500	119,400	204,900	341,300	213,877	294,516
ZINC (short tons):						
Colorado	....	6,599	23,238	41,746	*e*52,297	*e*67,143
Kansas	62,136	114,287	10,220	10,634	*e*14,365	*e*12,448
Missouri	14,741	11,844	140,652	114,019	*e*136,300	*e*155,960
Montana	....	....	12,408	55,986	*e*93,573	*e*114,630
New Jersey	....	....	20,217	27,734	*e*116,618	*e*110,698
Utah	....	....	7,221	6,818	*e*12,146	*e*14,786
Wisconsin	....	....	19,752	30,914	*e*41,403	*e*56,803

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a Includes production of West Virginia. *b* Includes production of entire Mississippi Valley. *c* Including New Jersey. *d* Including New York. *e* Mine production.

MINERAL PRODUCTION BY STATES, 1900-16—*Continued*

	1900	1905	1910	1914	1915	1916
NON-METALS:						
CEMENT (barrels):						
California	44,565	1,225,429	5,805,098	5,075,114	4,503,306	5,332,860
Illinois	240,112	1,545,500	4,459,450	5,401,605	5,156,869	3,642,563
Indiana	30,000	3,127,042	7,219,199	9,595,923	8,145,401	10,050,433
Iowa	....	....	....	4,233,707	4,559,630	4,703,213
Kansas	80,000	230,686	5,655,808	3,431,142	3,580,287	4,212,010
Michigan	664,750	2,773,283	3,687,719	4,285,345	4,765,294	4,919,023
Missouri	....	3,879,542	4,455,589	4,723,906	4,626,771	5,178,021
New Jersey	1,169,212	3,654,777	4,184,698	3,674,800	1,579,173	2,609,617
New York	465,832	2,111,411	3,296,350	5,886,124	5,043,889	5,643,677
Pennsylvania	4,984,417	13,813,487	26,675,978	26,570,151	28,648,941	27,323,149
COAL (short tons):						
Alabama	8,394,275	11,866,069	16,111,462	15,593,422	14,927,937	18,086,197
Arkansas	1,447,915	1,934,673	1,905,958	1,836,540	1,652,106	1,994,915
Colorado	5,244,364	8,826,429	11,973,736	8,170,559	8,624,980	10,484,237
Illinois	25,767,981	38,434,363	45,900,246	57,589,197	58,829,576	66,195,336
Indiana	6,484,086	11,895,252	18,389,815	16,641,132	17,006,152	20,093,528
Iowa	5,202,939	6,798,609	7,928,120	7,451,022	7,614,143	7,260,800
Kansas	4,467,870	6,423,979	4,921,451	6,860,988	6,824,474	6,881,455
Kentucky	5,328,964	8,432,523	14,623,319	20,382,763	21,361,674	25,393,997
Maryland	4,024,688	5,108,539	5,217,125	4,133,547	4,180,477	4,460,046
Michigan	849,475	1,473,211	1,534,967	1,283,030	1,156,138	1,180,360
Missouri	3,540,103	3,983,378	2,982,433	3,935,980	3,811,593	4,742,146
Montana	1,661,775	1,643,832	2,920,970	2,805,173	2,789,755	3,632,527
New Mexico	1,299,299	1,649,933	3,508,321	3,877,689	3,817,940	3,793,011
Ohio	18,988,150	25,552,950	34,209,668	18,843,115	22,434,691	34,728,219
Oklahoma	1,922,298	2,924,427	2,646,226	3,988,613	3,693,580	3,608,011
Pennsylvania: Anth	57,367,915	77,659,850	84,485,236	90,821,507	88,995,061	87,578,493
Pennsylvania: Bitum	79,842,326	118,413,637	150,521,526	147,983,294	157,955,137	170,295,424
Tennessee	3,509,562	5,766,690	7,121,380	5,943,258	5,730,361	6,137,449
Texas	968,373	1,200,684	1,892,176	2,323,773	2,088,908	1,987,503
Utah	1,147,027	1,332,372	2,517,809	3,103,036	3,108,715	3,567,428
Virginia	2,393,754	4,275,271	6,507,997	7,959,535	8,122,596	9,707,474
Washington	2,474,093	2,864,926	3,911,899	3,064,820	2,429,095	3,038,588
West Virginia	22,647,207	37,791,580	61,671,019	71,707,626	77,184,069	86,460,127
Wyoming	4,014,602	5,602,021	7,533,088	6,475,293	6,554,028	7,910,647
COKE (short tons):						
Alabama	2,110,837	2,576,986	3,249,027	3,084,149	3,071,811	4,298,417
Colorado	618,755	1,378,824	*e*1,346,211	666,083	670,938	1,053,553
Illinois	....	10,307	1,514,504	1,425,168	1,686,998	2,320,400
New Mexico	44,774	89,638	401,646	362,572	389,411	502,812
Ohio	72,116	277,130	282,315	521,638	684,658	1,803,268
Pennsylvania	13,357,295	20,573,736	26,315,607	20,258,393	25,622,862	31,279,695
Tennessee	475,432	468,092	322,756	264,127	256,973	382,175
Virginia	685,156	1,499,481	1,493,655	780,984	629,807	1,242,332
West Virginia	2,358,499	3,400,593	3,803,850	1,427,962	1,391,446	2,521,309
NATURAL GAS (values):						
California	$79,083	$133,696	$476,697	$2,910,784	$4,069,004	$5,440,277
Illinois	1,700	7,223	613,642	437,275	350,371	396,357
Indiana	7,254,539	3,094,134	1,473,403	755,407	695,380	503,373
Kansas	356,900	2,261,836	7,755,367	3,340,025	4,037,011	4,855,389
New York	335,367	623,251	1,678,720	2,600,352	2,335,252	2,524,115
Ohio	2,178,234	5,721,462	8,626,951	14,667,790	17,391,060	15,601,144
Oklahoma	....	130,137	3,490,704	8,050,039	9,195,804	11,983,774
Pennsylvania	10,215,412	19,197,336	21,057,211	20,401,295	21,139,665	14,344,324
West Virginia	2,959,032	10,075,804	23,816,553	35,076,755	36,424,263	47,603,396
PETROLEUM (bbls.):						
California	4,324,484	33,427,473	73,010,560	99,775,327	11,983,774	90,951,936
Colorado	317,385	376,238	239,794	222,773	208,475	197,235
Illinois	200	181,084	33,143,362	21,919,749	19,041,695	17,714,235
Indiana	4,874,392	10,964,247	2,159,725	1,335,456	875,758	769,036
Kansas	74,714	*c*12,013,495	1,128,668	3,103,585	2,823,487	8,738,077
Louisiana	....	8,910,416	6,841,395	14,309,435	18,191,539	15,248,138
New York	....	1,117,582	1,053,838	938,974	887,778	874,087
Ohio	22,362,730	16,346,660	9,916,370	8,536,352	7,825,326	7,744,511
Oklahoma	6,472	*d*	52,028,718	73,631,724	97,915 243	107,071,715
Pennsylvania	....	10,437,195	8,794,662	8,170,335	7,838,705	7,592,394
Texas	836,039	28,136,189	8,899,266	20,068,184	24,942,701	27,644,605
West Virginia	16,195,675	11,578,110	11,753,071	9,680,033	9,264,798	8,731,184

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c Includes production of Oklahoma. *d* Included with figures for Kansas. *e* Includes production of Utah.

IMPORTS AND EXPORTS OF MINERAL PRODUCTS, 1900–17

(*U. S. Statistical Abstract*)

(000 omitted)

	1900	1905	1910	1913	1914	1915	1916	1917
IMPORTS:								
Aluminium	....	....	....	$5,055	$4,148	$2,999	$1,977	$602
Antimony (ore and metal)	$341	$363	$551	1,134	696	1,420	8,039	3,221
Asbestos, unmanufactured	293	706	1,122	1,760	1,678	1,513	2,625	3,945
Manufactures of	15	53	269	395	391	230	170	68
Bismuth	225	305	316	....	....	....	....	196
Cement	....	1,276	602	122	160	132	9	20
Clays or earths	1,035	1,272	2,076	2,394	2,246	1,983	1,705	1,542
Coal	4,476	3,906	4,469	4,376	3,700	4,179	4,866	4,156
Coke	232	835	521	463	537	398	290	134
Copper: in ore, matte, etc.	3,032	4,892	9,272	13,667	13,696	11,228	22.851	32,576
In pigs, ingots, etc.	12,457	19,942	30,938	45,909	40,809	20,432	52,927	93,986
Emery and other abrasives	201	309	473	....	....	....	....	1,760
Gold	44,573	53,648	43,339	69,194	66,538	171,568	494,009	977
Iron and Steel:								
Iron ore	1,497	1,670	6,763	7,035	6,984	3,823	4,618	3,986
Pig iron, including ferro-silicon	2,109	2,989	6,289	6,402	1,782	4,235	7,424	9,942
Scrap iron and steel	562	174	1,507	463	346	281	1,012	2,396
Manufactures of	17,806	20,346	33,213	26,770	26,550	18,222	17,433	19,937
Lead, ore and base bullion	3,128	3,616	3,643	3,397	1,987	2,574	3,358	5,043
Pig and manufactured	27	296	279	20	69	91	578	555
Manganese, ore and oxide of	2,693	1,661	1,592	2,196	1,841	1,494	5,358	10,546
Marble and manufactures of	812	1,308	1,552	1,393	1,335	894	729	659
Nickel ore and matte	1,070	1,205	3,618	6,398	6,109	5,074	9,520	9,971
Oils, mineral	220	494	610	9,216	13,665	9,790	12,512	17,840
Phosphates, crude	504	750	152	....	....	....	....	....
Plaster rock	242	361	426	....	....	....	....	385
Platinum	1,832	1,959	3,345	5,213	3,975	1,630	4,256	2,118
Salt	625	496	395	377	423	391	330	335
Silver	35,256	27,484	45,217	41,268	30,326	29,110	34,154	35,004
Sulphur ore	1,224	1,694	2,626	4,111	3,695	4,107	7,121	5,856
Talc	1	47	115	....	....	....	....	238
Tin	19,104	23,378	30,869	53,112	39,422	30,777	50,877	54,996
Zinc, ore	....	229	1,139	831	251	1,818	10,425	7,597
Manufactures of	171	60	870	1,911	364	272	523	191
EXPORTS:								
Aluminium and manufactures of	244	175	666	1,046	1,101	3,245	5,644	20,230
Asbestos and manufactures of	93	234	312	688	687	535	1,019	1,502
Asphaltum and manufactures of	121	291	702	1,640	1,493	1,016	1,341	1,267
Cement	163	1,484	2,292	5,822	3,382	3,241	3,777	4,112
Coal	19,502	29,158	40,512	65,097	59,921	55,906	65,958	83,119
Coke	1,233	2,228	3,077	3,318	2,789	2,304	3,779	6,281
Copper, ore and matte	1,009	1,338	1,304	2,958	3,257	220	....	....
Manufactures of	57,852	86,225	88,004	140,164	146,222	99,558	173,946	322,284
Emery and corundum	170	347	872	2,311	2,114	1,802	3,333	6,069
Gold	48,266	92,594	118,563	77,762	112,038	146,224	90,249	291,921
Graphite	21	43	302	496	656	520	892	1,458
Iron and Steel:								
Iron ore	79	581	1,637	3,684	3,401	1,277	2,797	3,285
Pig iron	....	828	1,353	4,141	2,859	2,071	5,847	24,729
Scrap iron and steel	749	270	281	1,435	841	359	2,537	4,764
Manufactures of	118,039	133,630	177,497	299,029	247,779	247,774	601,057	1,096,564
Lead, manufactures of	205	499	481	589	2,610	9,045	13,823	16,562
Marble and Stone:								
Unmanufactured	120	227	413	609	676	443	364	459
Manufactures of	1,556	1,055	1,034	1,626	1,470	831	968	1,423
Nickel, nickel oxide and matte	1,219	3,196	4,532	9,275	9,403	11,110	9,876	12,271
Manufactures of	....	97	80	....	....	....	....	1,894
Oils, mineral	75,611	79,793	99,090	137,237	152,174	133,693	166,417	230,953
Phosphate rock	6,376	6,886	7,454	9,524	10,617	1,742	1,763	1,118
Plaster	....	16	6	391	283	189	187	142
Platinum	61	10	43	....	....	....	....	285
Quicksilver	556	653	256	21	32	155	274	1,071
Salt	55	190	286	441	542	616	601	726
Silver	56,712	48,848	55,286	71,614	54,965	50,942	59,792	78,280
Tin, scrap	44	29	64	....	....	....	....	141
Manufactures of	387	721	879	1,453	1,477	1,786	2,890	5,411
Zinc, ore and dross	1,205	1,765	881	690	588	695	177	986
Manufactures of	1,669	1,319	196	1,063	406	21,243	45,867	66,109

XVIII. MANUFACTURES

W. M. Steuart

General Conditions.—The year 1916 closed with a great uprush of prices of staple commodities and agricultural products. Most lines of manufactures had been enormously stimulated by the war, and manufacturers faced the problems of 1917 with a wealth of capital never before at their command, but with costs of operation at unprecedented high levels. Manufacturing costs, except for temporary and local reactions, continued to advance during the year. The increase in costs of production was necessarily accompanied by increase in the prices of finished products. This condition became more acute as the year advanced. It was accompanied by a large expansion of bank loans, but the tendency to inflation was overcome by the volume of business, the amount of securities repurchased from Europe, and the amount of foreign loans made (see also XII, *Economic Conditions*). The abnormal increase in some branches of manufacture, and the shifting of industry emphasized the disproportion or lack of balance between the agricultural production and the industrial production. The rapid relative increase in industrial and urban population and the correspondingly rapid relative decrease in the agricultural and rural population which has been in progress for over a decade were more pronounced during the year, due to the great demand for labor in munitions plants and government work incident to the war. Inventions and improvements in agricultural machinery, however, so added to the productive power of the relatively diminishing number of farmers that they were able to increase their output of foodstuffs per unit of labor and capital. Nevertheless, the production of the staple agricultural products as foreshadowed in October was not entirely satisfactory (see XII, *Economic Conditions*; and XVI, *Agriculture*), and the prices of these and most other products advanced steadily during the year. As compared with prices prevailing in July, 1914, the month immediately preceding the outbreak of the European War, wheat and flour in the Minneapolis market had increased in June, 1917, more than 200 per cent.; wool (Ohio fine-fleece, scoured), 134.6 per cent.; worsted yarn (2-32S, cross-bred stock), 138.5 per cent.; bituminous coal (run of mine at Cincinnati), 172.7 per cent.; electrolytic copper, 142.5 per cent.; pig lead, 194.9 per cent.; pig tin, 102.6 per cent.; Bessemer pig iron, 267.1 per cent.; and steel billets, 419.7 per cent. Needless to say, the enormous foreign demand and the stupendous volume of exports continued to be the prime stimulating factor in the rise of prices of most commodities (see also XII, *Economic Conditions;* and XIX, *External Commerce*).

The prospective requirements of the Government were an important factor in industrial activities and necessitated readjustments in both production and prices. The discussion of government control of products and prices caused considerable unsettlement in both speculative and legitimate markets. The extensive and constantly increasing war requirements more than offset the lull in regular business, but as the year advanced most of the leading industries operated under increasing difficulty on account of the growing shortage of labor, especially during the early fall, when the government requirements for military supplies were being met. These requirements made necessary a shifting and readjusting process in many branches of industry. They tended to repress operations in some channels, while at the same time stimulating a wide range of war lines to great animation. It was impossible to determine in advance how far these readjustments would be necessary, which lines would be most repressed, and to which the prevailing conditions would give the greatest stimulation.

The labor problem was the most perplexing feature of the industrial conditions of the year (see also XV, *Labor*). The constant plea for higher wages rested on the ground that the cost of living had increased enormously and apparently would continue to increase. Increases in wages were necessarily followed or accompanied by further increase in prices. The assembling of a large army not only drew to an alarming extent on the productive labor in many lines, but the demands on transportation facilities, both by land and water, incident to its upkeep disarranged the distribution of products to an extent never before experienced. While these abnormal conditions of production and distribution continued throughout the year, it was a period of unusual prosperity in all basic lines of manufacture.

Industrial Failures.—Despite the very material increase in new enterprises and other factors calculated to enhance the possibilities of financial embarrassment, failures during the year were moderate, and there was no evidence that the economic readjustments occasioned by the nation's participation in the war caused an increase in financial failures. In fact, during the first half of the year there were but 7,488 failures in all lines, with liabilities amounting to $94,721,000, which was the best numerical exhibit since 1911, while the liabilities were the smallest for any similar period in nearly a decade. The following statement shows the magnitude of the failures in manufactures during the first three-quarters of 1916 and 1917:

	Number		Liabilities	
	1916	1917	1916	1917
1st quarter.	1,243	937	$23,807,210	$20,082,297
2d quarter.	1,004	951	15,090,532	20,358,611
3d quarter.	979	888	20,317,919	19,250,334

The failures returns for the nine months, better than those for monthly or quarterly periods, clearly disclose the comparatively very favorable mercantile and industrial situation of the year. Defaults for the first nine months reached only 10,737, against 13,250 for the same period in 1916 and 17,288 in 1915, and the liabilities involved were $141,950,038, against $154,586,707 and $241,464,060 in 1915 and 1916, respectively. Manufacturing debts at $59,691,242 were slightly in excess of the preceding year, but this was due to a single disaster for $5,000,000 in Connecticut in June, although some increase in liabilities was to be found also in the Middle-Atlantic and Central-East sections. (See also XII, *Economic Conditions.*)

Development of Manufactures.—The year has been one of the most remarkable in the history of domestic manufactures. The abnormal activity in all lines producing to meet the requirements of the military operations has been the predominating feature. The annual products of the manufactures of the country in 1849 were reported as being worth $1,019,000,000; the production for 1917, in all probability, was valued at more than $30,000,000,000. Seventy-eight per cent. of the more than six billion dollars worth of exports in the fiscal year 1917 consisted of wholly or partly manufactured goods. In the fiscal year 1914, the last normal year before the war, the proportion of such goods exported was only 59 per cent. In 1914 the exports of manufactures ready for consumption were valued at $724,908,000, or 31 per cent. of the total exports, while in 1917 their value reached $2,943,923,212, or 47 per cent. of the total (see also XIX, *External Commerce*). To what extent high prices have been a contributing element in the year's total may be conjectured from the fact that the export prices in June put wheat at $2.72, as against $1.27 a year earlier; corn at $1.66, as against $0.83; flour at $10.36, as against $5.52; and structural iron and steel at $84.48 per ton as against $56.50. During 1917, the third year of the war, the manufactures in most industries have been teeming with prosperity, their resources have been greater than ever before, and many have accumulated a large surplus.

Basic Industries.—Abnormal conditions in regard to the supply of raw materials and labor, prices, costs, and distribution have characterized the year's operations in all branches of manufacture. Notwithstanding these conditions, the manufacturing capacity of the country was greatly increased during the year. New plants were erected and many plants added new buildings and new machinery. The necessity for rapid increase in production to meet the requirements of the Government and the serious industrial disarrangement following the declaration of war emphasized the necessity of a closer coordination of industrial and governmental activities. With this in view, arrangements were made during the late summer and fall for the appointment, in most of the basic industries, of committees to represent the several industries, and to serve as connecting links between them and the Government. It was generally agreed that under the existing conditions the problems concerning the supply of materials and labor, the shifting of labor from one community to another or from private to government employ, were problems not only of the individuals in an industry, but of the industry as a whole, and not only of the industry, but also of the Government. To prosecute the war it was necessary that the Government obtain materials and supplies in vast quantities, and to accomplish this it was essential that it have the advice and assistance of men having thorough acquaintance with each industry. The Government was confronted also with serious problems in connection with the regulation of prices. Conditions rapidly developed which made the fixing of prices a matter of competition between buyers, the highest bidder securing the goods. In order to bring about maximum production at reasonable prices, it was necessary to fix prices to a certain extent in all the basic industries. (See also XII, *The Conduct of Business.*)

The manufacture of textile fabric and the conversion of the fabric into articles for personal wear and the manufacture of crude iron and steel and its conversion into finished products were the two basic industries to which special attention was directed by the disturbed conditions attending the war. The manufacture of textiles and their products, which covers the manufacture not only of fabrics and the partially manufactured material used in their production but also of articles for personal wear and of a great variety of products for other uses, is, from the standpoint of numbers employed, the most important generic group of manufactures in the United States. It was among the first to show the influences of the war crisis, which necessarily had a more direct and pronounced effect on some branches of the industry than on others.

Cotton.—Measured by the capital invested, number of persons employed and quantity and value of product, cotton is by far the most important of the textile manufactures. Since the outbreak of the European War its importance has increased as industrial changes have made it necessary to use 30 per cent. more cotton in the United States. The supply of cotton in the United States for the year ending July 31, 1917, amounted to 16,606,048 running bales, including 1,759,522 bales of linters, as compared with 16,972,895 bales in 1916 and 18,913,660 bales in 1915. Forty-six per cent. of the total supply for 1917 was consumed in the United States, while but 43 per cent. of the supply for 1916 was consumed in this country. Since 1914, when the price was the lowest recorded since 1898, the price of cotton has been rising rapidly, and the highest point was reached during 1917. The following statement shows the quotations for midland upland in cents per pound on or about Oct. 12:

	New York	New Orleans	Liverpool
1917.......	27.65	26¼	39.44
1916.......	17.55	16⅝	20.54
1915.......	12.50	12	14.38
1914.......	Nom.	6 11/16	10.60
1913.......	13.70	13 1/16	15.22
1912.......	11.00	10⅝	12.46
1911.......	9.75	9 1/16	10.82
1910.......	14.75	14⅝	16.30
1909.......	13.65	13⅜	14.52
1908.......	9.20	8 13/16	10.08
1907.......	11.70	11⅜	13.08

The stock of cotton on hand on Aug. 1 (3,173,832 bales) was the lowest recorded since 1914. Consumption proceeded at an unprecedented rate, and was stimulated by the requirements for military purposes. These requirements, so far as they related to the manufacture of explosives and medicinal cotton, were met in a measure by the increased production of linters, the short fibre obtained by the cottonseed-oil mills from reginning cotton seed before extracting the oil. Linters now enter into many lines of manufacture in which otherwise it would be necessary to use cotton. It is used in upholstering and in the manufacture of mattresses, comforts, batting, cushions, wadding and pads; for mixing with shoddy and for making low-grade yarns, wrapping twine, cheap rope and lamp and candle wicks; for making absorbent cotton; and in the manufacture of guncotton, nitre powder and writing paper. In the United States, prior to the European War, the greatest quantity was consumed in the manufacture of felts and batting. The demand for explosives since 1914 has resulted in greatly increasing the quantity of linters used in the manufacture of guncotton and smokeless powder. Experiments have proved that the short-fibre cottons are better suited for this purpose than the longer; hence, linters are being very generally used. This extended demand for linters has very materially increased the price of this product, the market price being several times as high as it was before the war.

The ginning of cotton is the first stage of its manufacture. For the crop of 1916 there were 21,624 establishments in which this process was carried on. Although there has been a decided increase in the quantity of cotton ginned during recent years, the number of ginneries has been decreasing. There is a general tendency to construct larger and better equipped establishments.

Of the 7,658,207 bales of cotton, including linters, consumed in the United States in 1917, between 85 and 90 per cent. was used in the manufacture of fabrics, the remainder being used in the manufacture of explosives, mattresses and medicinal cotton and for miscellaneous purposes. The spindle is the accepted unit of measurement for the consumption of cotton in the manufacture of fabrics. In 1917 the equipment of the mills of the United States comprised 34,221,252 spindles, as compared with 33,333,176 in 1916, an increase of 888,076. A certain percentage of the spindles are idle during each year; during 1917 there were 33,888,835 spindles in operation, while in 1916 there were 32,805,883. The increase in the number of active spindles kept pace with the increase in the consumption of cotton.

While the year as a whole was one of unusual prosperity for the cotton industry, the development was characterized by great irregularity. During the year there was a greater demand than ever before for coarse yarn goods, and cotton was used to a greater extent as an adulterant in combination with wool in the manufacture of clothing material, and also to a rapidly increasing extent in numerous products required for the automobile industry. The steady payment of regular and extra dividends by many mills indicated the continued prosperity of the mills following the period of uncertainty after the beginning of the war. Most manufacturers were of opinion that cotton would rule high for a long time, and in a number of instances mills with government contracts, made early in the season, large purchases of material, sufficient to meet requirements to the end of the year. It was reported early in September that the Federal Government and others engaged in war work had purchased since Jan. 1, for immediate and future delivery, between $200,000,000 and $250,000,000 worth of cottons of various kinds. This, and the fact that the exports for the fiscal year 1917 amounted to $136,253,858, ensured continued prosperity for a number of months.

Woolens and Worsteds.—Next to cotton, woolen and worsted fabrics are the most important of the textile products, and a maximum production of these also was essential for war purposes. Early in the war an embargo was placed on the export of wool from Australia, and the imports into the United States during the fiscal year ending June 30, 1917, amounted to only 372,372,218 lb. During the first nine months of the calendar year the imports amounted to 364,548,653 lb. Early in the year it was evident that a greater quantity of wool was being manufactured than in 1916, and the question of an adequate raw-wool supply for another year became very grave. The domestic production of wool is not more than three-eighths of the quantity required for domestic manufacture, and apparently there was no possibility of an increase in imports. In October it was estimated that the domestic wool clip would be under 250,000,000 lb., and the number of sheep under 40,000,000. The indications were that the number of sheep was decreasing, while the war requirements and the war destruction demanded at least 25 per cent. more wool than was required under normal conditions. The impending shortage in stocks, therefore, was serious, and there was formulated a well defined plan to conserve wool by the wider use of cotton, shoddy and other wool substitutes. During October this arrangement was generally adopted by manufacturers, but the demand for definite information concerning the possible supply was so insistent and of such grave importance to the Government that the Department of Agriculture took a census of stock as of Sept. 30, and found that there were 388,594,596 lb. of wool in the grease, 64,635,849 lb. of scoured, 24,330,015 lb. of pulled wool, 23,563,207 lb. of tops, and 23,042,529 lb. of noils. For the three years 1904, 1909, and 1914 the average annual consumption of wool in domestic manufactures amounted to 523,775,999 lb., or a monthly consumption of about 44,000,000 lb. The supply, therefore, was probably sufficient to carry the industry. During October also, in response to urgent presentations, a large quantity of wool was released for export from Australia to the United States. The situation in regard to the supply of raw material, however, continued to be the salient feature of the woolen- and worsted-goods market during the remainder of the year.

The first orders of the Government for overcoatings and heavy shirts and drawers for the army were placed in the early fall, and at once created an acute scarcity in these products for the general market. The following shows the annual production of some of the principal wool products under normal conditions, but the production for 1917 of most of the products was probably greatly in excess of the amounts shown:

	1914	1909
All wool woven goods:		
Square yards....	323,037,563	322,944,365
Value...........	$203,390,017	$219,853,767
Union or cotton mixed, woven goods:		
Square yards....	46,244,730	37,453,351
Value...........	$16,473,448	$14,327,973
Cotton-warp woven goods:		
Square yards....	196,179,866	210,346,081
Value...........	$48,816,015	$62,265,854
Carpets and rugs:		
Square yards....	66,340,274	81,218,881
Value...........	$64,683,322	$66,966,338

Silk Manufactures.—The year 1916 was one of unprecedented prosperity for the silk industry of the United States, and values of the raw material, as well as of silk fabrics, attained a level never before recorded. The year 1917 opened with stocks of raw silk about 25 per cent. lower than a year earlier, but as the year advanced and the production, stocks and possible consumption were more definitely indicated, it was evident there would be sufficient for all requirements. Japan came forward in a more remarkable manner as the largest supplier of the world, and is now the American silk manufacturers' chief source of supply. Owing to the reduced European crops due to the war, the high cost of reeling, the very limited shipping facilities, and the abnormal rates for freight space available, to which must be added as much as 10 per cent. for marine and war-risk insurance, exports to the United States of Italian raw silks have practically ceased.

The United States, which, prior to the war had been steadily increasing its proportion of the consumption of the world's total crop of raw silk, during the war has assumed the position of the main consumer. The demands of our manufacturers and the fact that they were supposed to be in position to pay high prices were the most important factors in the high prices with which the year opened. The spirit of economy acquired sufficient popularity in the spring and summer to have some effect on the sales of piece goods, but there was apparently a complete recovery by the fall. The fall trade promised to exceed that of 1916. The more general employment of women and higher wages made it possible for thousands to buy silk who never had purchased it before. By the close of the year the industry was, on the whole, in a prosperous condition.

The consumption of raw silk in the domestic textiles increased from 9,760,770 lb. in 1899 to 11,572,783 lb. in 1904, 17,729,306 lb. in 1909, and 25,021,945 lb. in 1914, and it is probable that there was a considerably larger increase for 1917.

The consumption of artificial silk has also increased rapidly, from 6,065 lb. in 1899 to 3,610,644 lb. in 1914. The annual production of some of the principal silk products under normal conditions is given in the following statement:

	1914	1909
Broad silks:		
Yards	216,033,696	185,707,316
Value	$137,719,564	$107,881,146
Velvets:		
Yards	16,318,135	10,093,583
Value	$8,570,022	$4,767,990
Plushes:		
Yards	9,114,992	2,759,411
Value	$10,135,842	$2,104,768
Upholstery and tapestries:		
Yards	477,699	226,717
Value	$840,126	$382,820
Ribbons, value	$38,201,293	$32,744,873

Dyestuffs.—Next to the supply of the raw fibres, the success of the textile industries depends upon the supply of dyestuffs. Of all the industries created or developed as a direct result of war conditions, none has shown more rapid progress than American dyestuffs. Prior to the war dependence on foreign countries for the needs of the color-using industries was practically absolute. Approximately 90 per cent. of the artificial colors used at that time was imported, and for the 10 per cent. produced in the United States the manufacturers were largely dependent on foreign sources of supply for intermediates. There were but five concerns making coal-tar colors. Since the outbreak of the war the number has increased to more than 100. We are now manufacturing what is needed and more so far as nearly all the many varieties and shades are concerned. Our exports of dyestuffs in the year immediately preceding the war were valued at $356,000, while in 1917 they amounted to $11,700,000. With the consumption of the last shipment of dyes from Germany, which reached the United States in April, 1915, the textile industry has depended entirely upon the domestic production, which was naturally greatly stimulated by the rapid increase in prices. More by-product coke ovens were constructed to recover the primary coal-tar crudes (*A. Y. B.*, 1916, p. 489), more establishments engaged in the manufacture of intermediates, new plants were erected to manufacture dyes, and existing companies largely increased their output (see also XXIII, *Industrial Chemistry*).

The enactment of the law of Sept. 8, 1916, which increased the import duties on dyestuffs, may be taken as the end of the period of acute shortage of these products. More capital was at once invested in the industry, and its development went forward with confidence. The alizarine dyes and the indanthrene dyes are the only classes required by the textile manufacturers which are not now made in the United States. Figures compiled by the Bureau of Foreign and Domestic Commerce show that within three years after the foreign dyestuffs supply was cut off there has been $200,000,000 of American capital invested in the industry and the production is at the rate of about 60,000,000 lb. a year, an amount fully equal to the ordinary yearly consumption of the United States before the war. The developments indicate the establishment of a self-contained American coal-tar chemical industry which will free this country from all economic dependence upon foreign sources for the colors so essential to the textile interests.

Iron and Steel Industries.—It was estimated at the beginning of 1916 that the pig-iron capacity of the country was 39.000,000 tons; at the beginning of 1917 it was 46,000,000 tons. In the month of April the output of pig iron amounted to 3,319,809 tons; in May, 3,413,677 tons; in June, 3,332,509 tons; and in September, 3,137,242 tons. May was the largest month in daily production in the history of the pig-iron industry. The increase in blast-furnace capacity during 1917 has been much larger than for several years, and by the end of the year probably approached that of the steel-making capacity, which in all probability will be about 48,000,000 tons. (See also XII, *Economic Conditions;* and XVII, *Iron and Steel.*)

The high prices that have prevailed during the year are sufficient indication that the manufacturing capacity of the country was wholly absorbed. War-time demands and prices, however, upset many precedents and encouraged many increases in plant capacity, irrespective of the consideration whether or not they might prove excessive after the war. The great increase in prices is shown by the following statement, which gives quotations for some of the leading products in October of 1916 and 1917:

	October, 1917	October, 1916
Bessemer pig iron, ton	$37.25	$24.33
Basic pig iron, ton	33.95	20.83
Bessemer billets, ton	70.00	45.75
Bessemer sheet bars, ton	80.00	45.75
Open-hearth billets, ton	70.00	45.75
Iron bars, cwt	4.50	2.35
Sheets, black No. 28, cwt	9.00	3.23
Sheets, galv. No. 28, cwt	10.25	4.45
Wire nails, cwt	4.00	2.63
Connellsville furnace coke, ton	6.00	3.38
Heavy melting steel, ton	33.00	17.87
Rerolling rails, ton	40.00	18.75
Car wheels, ton	31.00	12.25

The crisis with Germany and the possibility of large purchases by the Government had a marked effect on the industry early in the year. As early as February the demand for some products exceeded the maximum production. This was especially noticeable in plates for shipbuilding, large quantities of which were required not only for domestic but for foreign shipyards. The unprecedented demand made it necessary to obtain the maximum production from the existing equipment, and many methods to increase efficiency were adopted. Trained operators were concentrated upon actual productive work to a greater extent than ever before, and every effort was made to relieve them of routine duties which could be performed by men of less intelligence.

The practical mobilization of the steel industry of the country on a war basis was well advanced by May. Measures of coöperation between the manufacturers and the Government were effected. Machinery for the purchase and distribution of essential supplies was provided. Enlarged facilities were being established and rapidly perfected under Federal supervision for working up raw material into heavy ordnance on a new scale of magnitude. During April and May the Government entered the market as a large purchaser of steel, and for the purpose of furnishing the Government with large quantities of steel for war purposes at reduced prices, arrangements were made to distribute the tonnage among the individual manufacturers according to mill capacity. Beginning with April, numerous contracts for munitions were awarded by the Bureaus of Ordnance of the Navy and War Departments. The requirements of the

THE MACHINERY INDUSTRY, 1914

	Number of Establishments	Value
Adding and calculating machines	44	[1] $14,734,455
Air-compressing machinery	84	5,158,121
Bakers' machinery	32	2,554,703
Bottlers' machinery	29	1,358,625
Brewers' machinery	54	3,881,554
Brick, pottery, and other clay-working machinery	89	2,438,861
Cannery machinery	28	1,305,786
Cash registers and parts	19	[1] 15,935,069
Concrete mixers	44	2,956,058
Cotton gins	25	4,901,680
Cranes	26	4,194,457
Dairy machinery and apparatus:		
Cream separators	36	[1] 8,663,575
All other	42	4,334,799

THE MACHINERY INDUSTRY, 1914

Continued

	Number of Establishments	Value
Elevators and elevator machinery	213	$17,228,101
Engines:[2]		
Electric locomotives	10	4,315,172
Internal-combustion	549	54,250,421
Steam—		
Locomotives	33	39,043,359
All other (marine, stationary, and traction)	243	30,498,638
All other	52	3,633,008
Parts	....	[3] 12,656,537
Excavating machinery (including dredges and steam shovels)	21	2,968,965
Glass-making machinery	30	1,090,726
Laundry machines:		
Power machines	73	6,135,321
All other	35	1,429,958
Lawn mowers	22	2,848,119
Leather machinery	27	1,066,939
Metal-working machinery:		
Machine tools	409	31,446,660
All other	277	17,419,526
Meters, gas and water	40	[1] 11,638,074
Milling machinery (flour and grist)	101	5,017,761
Mining machinery:		
Oil-well machinery	127	10,569,483
All other	153	13,253,634
Oil-mill machinery	20	1,878,228
Paper and pulp mill machinery	104	6,811,141
Paper-working machinery	35	1,777,086
Printing presses	88	8,396,508
Printing and bookbinding machinery (other than printing presses)	56	3,197,319
Pumps and pumping machinery	298	[1] 27,456,916
Refrigerating machinery (including ice-making machinery)	73	10,522,322
Road-making machinery	31	3,545,272
Rubber machinery	14	2,725,897
Sewing machines	48	[1] 21,710,643
Shoe machinery	72	5,949,300
Sugar-mill machinery	42	1,971,543
Textile machinery	241	30,437,689
Typesetting machines, linotype and other	10	7,634,631
Typewriting machines	53	[1] 20,516,532
Vacuum cleaners	39	2,058,524
Windmills	50	[1] 5,842,778
Woodworking machinery:		
Sawmill machinery	182	6,303,920
All other	196	7,088,980

[1] Includes value of all products of establishments engaged primarily in the manufacture of the machines specified.

[2] Exclusive of engines made of component parts of other machinery and not reported separately, and of automobile engines made and installed by the manufacturers of the complete machines.

[3] Exclusive of parts made by establishments not engaged in making complete engines.

Government affected every branch of the industry. Large orders were given for machinery, such as lathes, planers, gun-making machinery, and machine tools of every description.

The equipment of the country for the manufacture of machinery that could be diverted to the production of the kinds required for war purposes was rather limited. The latest statistics on the subject were compiled by the Federal Census Bureau and relate to the production of 1914. They are summarized in the accompanying statement.

It was early realized that the American machine-tool industry was one of the pivotal factors in the war preparations, and no link in the chain of our industry was forced under more stress than that to which it was subjected during the year. The construction of ships, guns, ordnance, airplanes, in fact, the whole equipment of the army depended upon it. The activity in the industry increased constantly during the year. By the fall builders of heavy machinery equipment were being deluged with government orders. It was an easier matter to increase the country's capacity for building hulls of ships than to increase the capacity for building marine engines, but the capacity for the construction of this type of engine has been steadily growing to meet the demand, and so also has the capacity for building boilers, marine pumps, condensers and similar machinery required for naval construction.

The metal-working industries have been put upon a stronger basis than ever before. We are producing 40 per cent. more iron and nearly 50 per cent. more copper than before the war. This development has been accompanied by a great increase in the production of tungsten and high-speed steels, and the rapid increase in the electric steel furnaces has been a noteworthy (see also XVII, *Iron and Steel*) feature.

Other Industries Affected by the War.—The movement of troops and their equipment, of the materials required for the construction of cantonments (see XX, *Civil Engineering*), and of munitions for export, as well as the vast quantity of supplies of all kinds necessary to the organization of the nation for war, seriously interfered with the distribution of manufactured as well as other products. This is especially the case in the manufacture of heavy commodities not essential for immediate military use. Lumber is one of the products of this class. During 1916 there were about 30,000 saw mills in operation, and the cut of lumber was approximately 40 billion feet, but the output was smaller than it would ordinarily be in a year of good demand. The reduction was attributed to lack of shipping facilities, unfavorable weather conditions, heavy demand for labor, and resulting high wages. These conditions have been accentuated during 1917, and the actual amount of lumber cut was probably considerably less than in 1916.

The great activity in war industries has naturally diverted capital and labor from other lines not directly influenced by such activities. These changes have been accompanied by reduction in output and resulting increases in prices. The decrease in the manufacture of certain products by some of the warring nations is reflected in the statistics of imports. In some cases a decreased production in one nation has been accompanied or followed by an increase in the same class of products in one or more of the other nations, and there has been no marked decrease in the exports to the United States. As a rule, these conditions, in so far as they affect our domestic industries, are reflected in products of comparatively minor importance. The following statement shows the value of the imports for which there has been a decrease during the war:

	1914	1915	1916	1917
Earthen, stone and china ware	$10,629,178	$8,681,472	$5,837,206	$5,989,964
Macaroni and similar preparations	5,698,783	3,061,337	1,525,695	262,909
Leather gloves	9,487,969	7,673,516	4,793,916	6,425,265
Oilcloth	1,762,896	1,160,941	513,396	260,781
Lithographic labels and prints	1,766,371	1,149,820	533,187	388,245
Bottles, vials, demijohns, etc	1,148,460	816,493	766,592	749,206
Bottles, decanters and other glass ware, cut and ornamented	1,151,875	545,222	282,783	307,819

A decrease in the imports of certain commodities may be accompanied by a decrease in domestic consumption, but it is probable there would be an increase in domestic production sufficient at least to satisfy urgent requirements, and there would be no appreciable decrease in the *per capita* consumption. Under the normal conditions existing in 1914 the annual production in the United States of earthen, stone and china ware was valued at about $37,000,000. The exports in 1917 were valued at $6,162,000. If the domestic production has increased as rapidly as the imports have decreased, the proportion that the foreign products forms of our total consumption has decreased from slightly less than one-fourth to less than one-eighth.

Just before the war there were 373 establishments in the United States engaged in the manufacture of macaroni, vermicelli, noodles and similar food products; the capital invested in the industry amounted to $8,674,000, there were 3,534 wage earners employed, and the annual products were valued at $12,884,000. Under normal conditions, therefore, the domestic production exceeded the imports by about $7,000,000. If there has been no increase it now exceeds the imports by more than $12,000,000. It is probable, however, that there has been a considerable increase in the domestic manufacture, and the imports form a very small proportion of the total consumption.

For several years prior to 1914 there had been very little, if any, increase in the manufacture of leather gloves in the United States. The production of all kinds of leather gloves, mittens and gauntlets for that year was valued at $22,257,000. In certain styles the foreign manufactures were gradually supplying a larger proportion of the domestic consumption. There has been a marked decrease in the imports during the last four years, and while the domestic production may not have increased, it is now supplying a much larger proportion of the consumption than formerly.

There are about 31 establishments in the United States engaged in the manufacture of floor oilcloth and linoleum, cork carpet, enameled oilcloth, table coverings, and carriage cloth. There has been a steady increase in the industry since its establishment, and the production for a normal year is now valued at about $26,000,000. Imports and exports were each valued normally at about $1,500,000. There has been a decided decrease in the imports, however, and the industry now has a larger market both at home and abroad.

The values of the imports for a few products for which there has been a decided increase since 1914 are given in the following statement:

	1914	1915	1916	1917
Antimony	$696,362	$1,420,774	$8,040,192	$3,220,921
India rubber, unmanufactured	76,162,220	83,030,269	155,044,790	189,328,674
Plumbago or graphite	1,846,126	1,387,873	4,298,530	9,678,160
Zinc and manufactures of	341,960	1,818,140	10,425,111	7,596,930
Dyewoods	486,492	939,356	3,906,367	4,326,576
Printing paper valued at not over 5 cents per pound	10,765,108	12,883,452	16,670,604	23,620,194

It is evident from these figures that the increase in imports is, in the main, due to the demand for raw or partially manufactured material for use in domestic manufactures. The largest values represent materials used directly or indirectly in the manufacture of war supplies. The large increases are an indication of the increased activity in manufactures during the year.

Buttons.—The button industry is one in which there have been important changes since 1914, which illustrate the unusual conditions that are now constantly developing. Buttons are manufactured principally from bone, brass, celluloid, cloth, composition metal, fresh-water mussel shells, mother-of-pearl or ocean shells, glass, hoof, horn, iron, leather, paper board, steel and vegetable ivory. The imports in 1914 were valued at $2,082,029, and they came principally from Germany, Austria-Hungary and France. By 1916 the imports had decreased to $788,902, but for 1917 they amounted to $1,206,859, and came principally from Japan. They consisted largely of pearl buttons made from ocean shells, and the majority are of an inferior variety, but they come into severe competition with the small sizes and cheaper grades manufactured in the United States. The domestic production of the ocean-shell button now approximates 5,000,000 gross, valued at $3,000,000 and it is contended that the existence of the industry is seriously threatened by the competition from Japan.

PATENTS AND INVENTIONS

WALTER F. ROGERS

Patent Legislation.—The most interesting patent legislation of the year has been that relating to the interest of enemies of the United States in inventions. Two acts of Congress relate to the protection of information of value to the enemy. By Act of Oct. 6, 1917, Congress provides that the Commissioner of Patents may suppress publication by holding up the issue of a patent for any invention disclosed in an application for patent which, in his opinion, may be a benefit to the enemy or endanger the interests of this country during the war. The Commissioner cannot inflict any penalty; he may, however, hold the invention abandoned and therefore refuse to patent it at all. The Trading with the Enemy Act of the same date has a clause (Sec. 10 i) which provides that the President, who has since delegated the power to the Federal Trade Commission, may prohibit the publication of any invention of benefit to the enemy in an application for patent or otherwise by order which if disobeyed subjects the offender to punishment by fine and imprisonment.

These acts, while apparently conflicting, are not necessarily so. The act empowering the Commissioner may have been necessary in order to validate certain previous acts of the Commissioner, who, by his order numbered 2331 of June 13, 1917, after notice to that effect, amended Patent Office Rule 77 (239 O. G. 659) and began to hold up patents of the kind in question. Again, it is obvious that the Commissioner and his subordinate officers have knowledge and understanding of all applications for patents, whereas the Federal Trade Commission has not. On the other hand, the Federal Trade Commission may have various ways of discovering inventions otherwise than by applications for patent, while the Commissioner of Patents has only one. Furthermore, the Federal Trade Commission may be applied to "on suspicion" in cases where applications for patent may be contemplated but not yet filed or where one is suspected of having a secret invention. The two acts, therefore, are supplemental to each other, the Commissioner being subject to the order of the Federal Trade Commission. There seems to be a tendency to overrate and harmfully apply these provisions, inasmuch as it is the province of the patent law to enrich the arts by disclosures of inventions and to prevent subsequent patentees from obtaining patents for the same subjects.

The Trading with the Enemy Act of Oct. 6, 1917, provides (Sec. 10) that an enemy or ally of enemy may file a patent or copyright application during the period of the war; if he is unable during the war, or within six months thereafter, on account of conditions arising out of war, to file such application or take any necessary action in connection therewith within the period prescribed by law, he may be granted an extension of nine months beyond the expiration of said period, provided the country of which the applicant is a subject extends substantially similar privileges to the citizens of the United States. The President is empowered to issue licenses during the period of the war for the use by citizens of the United States of any patent or copyright owned or controlled by an enemy or an ally of enemy. A licensee under the Act is required to file with the President full statements of the extent of the use of the license, and to pay to the alien property custodian not more than five per cent. of the gross receipts from the use of such patent or copyright. At the end of the war and within one year thereafter the owner of such patent or copyright may sue in the Federal courts for the recovery of his rights of ownership. During the period of the war enemy or ally of enemy owners of patents or copyrights may sue in the Federal courts to enjoin the use of such patents or copyrights by persons other than licensees under the Trading with the Enemy Act.

The Federal Trade Commission has printed for free distribution a series of instructions, rules and forms concerning patents, trade-marks, prints, labels and copyrights, having particular reference to the several clauses of Section 10 of the Trading with the Enemy Act and the executive order of the President putting it into effect. At present an anomalous condition exists of an officer who is the "custodian" of alien property, practically a receiver, and another officer empowered to grant compulsory licenses under the patents held by the custodian. It remains to be seen how these two officers will adjust their relations so that one may grant licenses on property held by the other while that other collects on the licenses as granted by his colleague in government.

The Patent Office.—The Patent Office has continued to grant patents on mechanical inventions and designs and to register trade-marks, prints and labels in great numbers as heretofore. A large proportion of the applications are filed by the advertising "attorneys" who lure the inventors of the useless with suggestions of glittering rewards, thus hampering the work upon the thousands of important improvements which advance the arts day by day.

The total number of patents for inventions at the end of 1917 was approximately 1,252,000, and the Patent Office has to its credit in the Treasury about $10,000,000.

XIX. TRADE, TRANSPORTATION, AND COMMUNICATION

GROVER G. HUEBNER and ROBERT RIEGEL

MERCHANT MARINE

Tonnage Afloat.—Official figures for the year ending June 30, 1916, show a slight decrease of less than one per cent. in the number of vessels registered, enrolled and licensed, and a small relative increase of 0.9 per cent. in the tonnage of such vessels. During the preceding fiscal year, the tonnage increased by 5.8 per cent. The decline in number of vessels and the small increase in tonnage were due entirely to vessels engaged in the coasting trade. The gross tonnage of vessels engaged in foreign trade increased from 1,871,543 tons in 1915 to 2,191,715 tons in 1916. During the European War the American shipping engaged in foreign trade has more than doubled, a growth unprecedented in American maritime history. Since our total shipping during this period has increased by only 540,961 tons, it is obvious that what has occurred is a transfer of ships from the trade between our own ports to the more lucrative foreign carrying trade. The tonnage engaged in the Great Lakes trade decreased from 2,818,000 tons in 1915 to 2,760,815 tons in 1916, and that engaged on seaboards and rivers from 3,699,886 in 1915 to 3,517,119 in 1916. The following table shows the course of the documented marine since 1880:

Year Ending June 30	Registered Vessels		Enrolled Vessels		Licensed Vessels Under 20 Tons		Total Documented Merchant Marine	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1880....	2,378	1,352,810	16,410	2,649,353	5,924	65,871	24,712	4,068,034
1890....	1,527	946,695	15,063	3,391,884	6,877	85,918	23,467	4,424,497
1895....	1,260	838,187	14,408	3,705,104	7,572	92,669	23,240	4,635,960
1900....	1,330	826,694	13,786	4,239,569	8,217	98,576	23,333	5,164,839
1905....	1,372	954,513	14,126	5,391,802	9,183	110,228	24,681	6,456,543
1910....	1,526	791,825	14,049	6,593,728	10,165	122,529	25,740	7,508,082
1911....	1,703	872,671	13,933	6,640,820	10,355	125,299	25,991	7,638,790
1912....	2,012	932,101	13,912	6,652,686	10,604	129,396	26,528	7,714,183
1913....	2,305	1,027,776	14,001	6,726,340	10,764	132,402	27,070	7,886,518
1914....	2,405	1,076,152	13,836	6,718,974	10,702	133,562	26,943	7,928,688
1915....	2,794	1,871,543	13,348	6,384,725	10,559	133,161	26,701	8,389,429
1916....	3,134	2,191,715	12,965	6,147,046	10,345	130,888	26,444	8,469,649

Of the total registered, enrolled and licensed gross tonnage operating under the American flag on June 30, 1916, steamers comprised 70 per cent., as compared with 69 per cent. in 1915; sailing vessels showed their usual decline, contributing 15 per cent. of the total, as compared with 16 per cent. in 1915; and barges and canal boats comprised 13 per cent., and motor boats 2 per cent., the same as in 1915.

Owing to war conditions the preliminary figures on 1917, showing the number and tonnage of American documented vessels have not yet been made public by the Commissioner of Navigation.

Undocumented Craft.—The above figures do not include many undocumented vessels, of which no reliable recent statistics are available, no count having been made since the 1906 census report, which showed 19,497 such vessels with a gross tonnage of 6,579,402 tons. Detailed figures were given in the YEAR BOOK for 1910 (p. 523).

Geographical Distribution.—The Atlantic-Gulf coast, which was an important factor in the increased tonnage of 1913 and 1914 and almost entirely responsible for the gain in 1915, showed a slight increase in 1916, its tonnage aggregating 4,431,151, as compared with 4,295,885 in 1915. The relative importance of this coast increased slightly, for it furnished 52 per cent. of the total tonnage, as compared with 51 per cent. in 1916. The absolute increases in tonnage occurred on the Pacific Coast and in Hawaii, the former now furnishing about 13 per cent. of the total, and the latter 0.1 per cent., both approximately the same percentages as in 1915. The northern lakes tonnage comprises about 33 per cent. of the total. The distribution of vessels and tonnage on June 30, 1916, was:

	Sailing Vessels		Steam Vessels		Motor Vessels		Canal Boats and Barges		Total	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
Atlantic & Gulf	4,686	861,226	3,534	2,658,093	5,197	88,756	2,937	823,076	16,354	4,431,151
Porto Rico	80	9,161	10	2,569	9	143	...	......	99	11,873
Pacific Coast	416	254,759	1,002	681,108	2,296	56,512	1,360	122,422	5,074	1,114,801
Hawaii	7	3,494	22	11,895	22	868	.....	....	51	16,257
Northern Lakes	191	182,225	1,560	2,434,603	775	9,915	525	134,072	3,051	2,760,815
Western Rivers	2	72	696	106,827	938	18,774	179	9,079	1,815	134,752
Total	5,382	1,310,937	6,824	5,895,095	9,237	174,968	5,001	1,088,649	26,444	8,469,649

The following table shows the distribution of the aggregate documented tonnage among the leading customs districts in 1915 and 1916:

Customs Districts	1915	1916
Boston	243,726	262,355
New York	2,231,963	2,380,236
Philadelphia	318,364	322,959
Baltimore	235,517	270,443
San Francisco	570,681	575,542
Seattle	345,040	347,281
Buffalo	296,345	291,919
Detroit	198,958	156,769
Chicago	109,333	101,719
Duluth	921,634	893,755

The tendency to transfer tonnage to the Atlantic trade previously mentioned is here evident in the increased tonnage of the Atlantic ports and the decrease in the Lake ports.

Relative Position of American Deep-Sea Shipping.—The total value of imports and exports carried in American vessels continues to increase enormously as compared with past years. The year 1916 shows an absolute increase in the value of goods carried in American vessels of $377,876,304, or 66 per cent. over the preceding year. Since the value of merchandise carried in foreign vessels increased only 43 per cent., the percentage of the total value carried in American vessels increased from 14.3 per cent. in 1915 to 16.3 per cent. in 1916. This is the largest proportion of goods carried by American vessels since 1889. The value of merchandise carried in cars and land vehicles, increase of which since 1909 was temporarily halted in 1915, resumed its gain in 1916 with a total of $705,325,184, as compared with $450,133,605 in 1915. The following table shows the position of the American merchant marine in the carrying trade since 1821:

AMERICAN VESSELS IN THE FOREIGN TRADE

Year	Total Imports and Exports				
	In Cars and Other Land Vehicles	By Sea			Per Cent in American Vessels
		American Vessels	Foreign Vessels	Total	
1821	....	$113,201,462	$14,358,235	$127,559,697	88.7
1826	....	150,331,636	12,238,163	162,569,799	92.5
1840	....	198,424,609	40,802,856	239,227,465	82.9
1860	....	507,247,757	255,040,793	762,288,550	66.5
1880	$20,981,393	258,346,577	1,224,265,434	1,482,612,011	17.4
1900	154,895,650	195,084,192	1,894,444,424	2,089,528,616	9.3
1905	242,265,329	290,607,946	2,103,201,462	2,393,809,408	12.1
1910	319,132,528	260,837,147	2,721,962,475	2,982,799,622	8.7
1911	365,903,334	280,206,464	2,930,436,506	3,210,642,970	8.7
1912	426,116,920	322,451,565	3,109,018,858	3,431,470,423	9.4
1913	505,831,459	381,032,496	3,392,028,429	3,773,060,925	10.0
1914	473,036,293	368,359,756	3,417,108,756	3,785,468,512	9.7
1915	450,133,605	571,031,912	3,420,693,563	3,992,625,475	14.3
1916	705,325,184	948,908,216	4,877,132,995	5,826,041,211	16.3

Value figures, however, are plainly at the present time not a reliable index of the condition of American shipping. In addition to the vast increase in American trade, the shortage of ocean tonnage and the increase in American shipbuilding, such figures reflect also the very large rise in commodity prices (see XII, *Economic Conditions;* XVI, *Agriculture;* and XVIII, *Manufactures*). The quantities of exports requiring ship space, for example, have not increased in proportion to values. This is clearly indicated by the following table of net-register tonnage entered and cleared. During 1916 the percentage of American ship tonnage to the total tonnage entered and cleared increased from 28.5 per cent. to 34.5 per cent., while during 1917 this percentage increased only from 34.5 per cent. to 37 per cent. This, however, was attributable in part to a decline in the amount of foreign tonnage entered and cleared and not entirely to an absolute gain in American tonnage. By far the greater part of the relative American gain occurred during the first two years of the war and there has been a perceptible slackening of the pace during 1917. The following table contains the official figures of entrances and clearances of American and foreign vessels in the foreign trade since 1900:

ENTRANCES AND CLEARANCES IN THE FOREIGN TRADE

Year	Total Net Tonnage	Foreign		American	
		Net Tonnage	Per Cent.	Net Tonnage	Per Cent.
1900	56,444,146	44,099,576	78.0	12,344,570	22.0
1905	62,140,758	47,857,126	77.0	14,283,632	23.0
1910	79,941,664	62,244,602	78.0	17,697,062	22.0
1911	85,112,136	65,665,903	77.0	19,446,233	23.0
1912	92,574,983	69,614,418	75.0	22,960,565	25.0
1913	101,791,132	74,772,764	73.5	27,018,368	26.0
1914	106,571,986	79,101,283	74.2	27,470,703	25.8
1915	93,595,554	66,901,818	71.5	26,693,736	28.5
1916	103,972,905	68,143,162	65.5	35,824,742	34.5
1917	102,533,349	64,662,885	63.0	37,870,464	37.0

Total Shipping in the Foreign Trade.—The total vessel tonnage entered and cleared in the foreign trade showed a decrease in the year ending June 30, 1917, of 1,439,556 tons net, as compared with an increase of 10,377,351 tons net in 1916. This was entirely due to a falling off in the foreign tonnage. Entrances decreased 2 per cent. and clearances less than 1 per cent. These decreases were principally accounted for by declines in entrances from and clearances to Europe, Oceania and Africa. The following table shows the tonnage entered and cleared during the fiscal years 1916 and 1917 in the following continents:

	Entrances		Clearances	
	1916	1917	1916	1917
Europe	18,806,275	17,793,494	19,926,544	18,890,778
North America	27,104,870	27,318,484	26,948,101	27,694,854
South America	2,580,101	2,666,408	2,707,712	2,772,810
Asia	1,409,298	1,507,730	1,620,406	1,586,064
Oceania	605,490	425,171	753,834	597,927
Africa	1,043,863	751,992	466,411	527,637
Total	51,549,897	50,463,279	52,423,008	52,070,070

Tonnage Built.—Tendencies in shipbuilding during the year ending June 30, 1916, were exactly the opposite of those during the preceding year. While the number of vessels built in 1915 increased, the total tonnage showed a decline. In 1916, however, 937 vessels were constructed, as compared with 1,157 in 1915, but the tonnage constructed in 1916 exceeded that of 1915 by 100,301 tons. The 1916 figures begin to reflect the increased interest in shipbuilding which began during the latter part of 1915 and still continues. The figure of 325,413 tons constructed during the fiscal year 1916, however, does not adequately measure the increased activity of American shipyards. This figure includes only vessels placed in commission during that fiscal year, although on July 1. 1916. 385 steel vessels of 1.225.784 tons were being built or were under contract, of which 1,037,103 tons comprised ocean steamers of 1,000 tons or over. By Oct. 1, 1916. the number of steel merchant vessels building or contracted for in American shipyards had risen to 417, with a gross tonnage of 1,454,270, and by May 1, 1917, the total number of vessels had risen to 704, having a gross tonnage of 2,253,700. Later in the year, when the government ship-purchase plan was put into effect (see *infra*) the number of vessels under construction increased at an unprecedented rate. On Nov. 15, it was reported that the Emergency Fleet Corporation's construction programme included 1,200 vessels, with a deadweight tonnage of 7,500,000, distributed as follows:

	Ships	Tons
Wooden and concrete ships under contract	400	1,500,000
Steel ships under contract .	400	3,000,000
Vessels under construction taken over by the Government	400	3,000,000
	1.200	7,500,000

Work in shipbuilding yards has been considerably delayed by inability to obtain ship plates, increased demand for skilled labor, and wage difficulties. It is estimated, however, that over 900.000 tons gross register were launched during the year which ended June 30, 1917. (See also XX, *Shipbuilding.*)

The geographical distribution of the tonnage built in the United States in 1914, 1915 and 1916 is shown as follows:

	1914		1915		1916	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Atlantic and Gulf Coasts	554	215.141	540	171.422	421	266.066
Northern lakes	130	56,541	147	16,467	126	44,691
Pacific Coast	330	36,420	318	31,601	244	49,596
Western rivers	132	8.009	144	5,499	140	4,973
Porto Rico	3	64	5	35	4	52
Hawaii	2	75	3	98	2	35
Total	1.151	316.250	1.157	225.122	937	325,413

Analysis of these figures shows an enormous increase in the tonnage constructed on the Atlantic and Gulf Coasts, which furnish over 81 per cent. of the total tonnage constructed. Increases are apparent, however, everywhere except on the Western rivers and in Hawaii. Of the total of 325,413 tons constructed during 1916, 237.836 tons, or over 73 per cent., were steel vessels, while in 1915 58 per cent. were of this nature, and in 1914, 65 per cent. As a result of the exceptional maritime conditions existing, the number of sailing vessels constructed and also the total sail tonnage increased in 1916, in contrast to the decline of the past few years. Of the total tonnage constructed in 1916, steamers comprised 237.836 tons; sailing vessels, 14,765 tons; barges, 57.972 tons; motor boats, 12.289 tons; and canal boats, 2.551 tons. Steam tonnage was relatively of considerably more importance than in 1915. Of the total tonnage, over 73 per cent. was of this type of power, as compared with 63 per cent. in 1915, 71 per cent. in 1914, and 70 per cent. in 1913.

Ship Subsidies and Mail Payments.—The net cost of the foreign mail service for the fiscal year 1916 was $3.264.821, as compared with $3,074,875 in 1915, $3,565,323 in 1914, $3.691,779 in 1913, and $3,195.883 in 1912. The year thus showed an increase as compared with 1915 of 6 per cent. Five contracts were in force during the year under the provisions of the Mail Contract Act of March 3, 1891, and subsidies of $1,090.918 were paid, as compared with $1.096.209 in 1915 and $1,089,361 in 1914. Conventions for reciprocal domestic letter rates were concluded with British Guiana and New Zealand. Arrangements have been made for handling mail for Central and South America through the medium of a United States mail service in the Panama Canal Zone. The international parcel-post service was extended to Argentina and China during 1916, while the parcel-post service to Austria-Hungary, Germany and the Netherlands has been suspended since the middle of 1916. Other mail, not carried under the Mail Contract Act of 1891 on the mileage basis, is carried by non-contract vessels on a weight and postage basis.

On March 3, 1917, the Mail Contract Act of 1891 was supplemented by a new law which empowers the Postmaster-General in the future to contract with American citizens for transporting mail between the United States and Great Britain in American-built vessels of not less than 35,000 tons gross and having a speed of not less than 30 knots per hour, at a compensation not exceeding eight dollars per mile for each outward voyage.

War Risk Insurance.—By an act approved by the President on June 12, amending the War Risk Insurance Act of Sept. 2, 1914, owners of merchant vessels are required to provide war-risk insurance for the officers and members of the crews. Upon failure to do so the Secretary of the Treasury may place such insurance to the account of the owner, and in addition the latter becomes liable to a penalty of $1,000. Such insurance may be carried by owners either through the Bureau of War Risk Insurance in the Treasury Department or through private insurance companies, as directed by the Secretary of the Treasury. The policies proposed are to provide in case of death one year's earnings and in case of permanent total disability the same amount, but in no case less than $1,500 or more than $5,000. For partial disability the payments range from 45 to 65 per cent. of the death benefit. In case of capture by the enemy compensation during the period of detention is provided. The rate for such insurance, originally 0.75 per cent., was reduced in October to 0.5 per cent. By the middle of October over $29,000,000 of insurance had been written, $282,000 in premiums had been earned, and losses of $48,000 had been incurred.

Another provision of the same act authorized reciprocal reinsurance of ships and cargoes between ports of the United States and friendly countries when such ships and cargoes are insured by a government at war with a common enemy. Up to Oct. 18, 1917, the total amount insured on hulls and cargoes totalled $893,000,000, for which premiums of $32,000,000 were received. Losses to that date were about $20,000,000, of which over 95 per cent. has been incurred since Feb. 1, 1917, when unrestricted submarine warfare began. The Bureau has not yet had to make use of the $50,000,000 appropriation made by Congress for loss payments in case of need.

Operations of the United States Shipping Board.—The U. S. Shipping Board created by the Shipping Act of Sept. 7, 1916 (*A. Y. B.*, 1916, p. 522), was organized in January under the chairmanship of William Denman of San Francisco (see IV, *National Administration*). Its chief work during the year has been the promotion of ship construction, a very important element of the contribution of the United States to the cause of the Allies. After the United States declared a state of war to exist between Germany and the United States, the scope of the ship-purchase plan which was the original *raison d'être* of the Board (*A. Y. B.*, 1916, p. 522) was greatly extended. The original expenditure authorized for ship construction and purchase ($50,000,000) was raised to $750,000,000 in June and to $1,934,000,000 in October. The Emergency Fleet Corporation, a subsidiary organization of the Shipping Board, has let many contracts for the construction of wooden and steel merchant vessels. By the middle of November, 400 wooden and concrete vessels were under contract, and contracts for an equal number of steel vessels had been let (see also "Tonnage Built," *supra*).

The Corporation also commandeered on Oct. 15 all vessels building in the United States, of 2,500 tons and over, including at least 400 cargo vessels of 3,000,000 dead-weight tonnage. Vessels other than those actually required for government service will be left in the hands of the owners but subject to the disposition of the Board. The rates for cargo boats range from $7.00 per ton on vessels of 2,500-3,000 tons to $5.75 on vessels of over 10,000 tons. An allowance is made for speed in excess of 11 knots. The rates for passenger steamers range from $9.00 to $11.50 per ton gross register. The entire dead-weight tonnage of vessels which are under contract or building for the Corporation aggregated 7,500,000.

During the latter part of August the Board entered into two agreements with labor. The first provides for the arbitration of all labor disputes in shipyards through the creation of an adjustment board composed of one representative appointed by the President, one by the American Federation of Labor, and one by the Emergency Fleet Corporation. Where the Navy is concerned, the Assistant Secretary of the Navy will sit. Representation of local labor and shipping interests is provided for, and in case of a tie the Secretary of War casts the deciding vote. The second agreement deals with the adjustment and control of wages, hours of labor and working conditions of longshoremen at ocean ports. This provides for the creation of a national commission composed of one member appointed by the Shipping Board, one by the Secretary of War, one by the International Longshoremen's Association, and one by the committee on shipping of the Council of National Defense. The Commission is to appoint local adjustment commissions of similar composition, and any dispute not settled by such local commission will be submitted to the national commission, whose decision is final. The union scale of wages, hours and conditions will be adopted as the standard at each port. About the middle of August also an agreement was reached regarding the wages and working conditions for men to man the merchant marine of the country, as follows: sailors and firemen, $60 per month; coal passers, $50; oilers and water tenders, $65; boatswains, $70; carpenters, $75, overtime pay for cargo work to be figured at 50 cents an hour and for ship work at 40 cents per hour. A 50 per cent. bonus is to be paid crews entering the war zone.

In June the Board began arrangements for a system of education in navigation in order to obtain masters and mates and also a system for training marine engineers.

Miscellaneous Legislation.—An act approved on May 12 authorized the President to take over all ships found in the jurisdiction of the United States owned by any corporation, citizen or subject of a nation at war with the United States. Such vessels may be operated, leased or chartered in the service of the United States in the foreign or coastwise trade through the Shipping Board or other department of the Government.

An act approved on Oct. 6 gave the Shipping Board power to suspend the present provisions of the law and permit vessels of foreign registry and foreign-built vessels admitted to American registry to engage in the coastwise trade of the United States during the war, except the coastwise trade with Alaska. The chief purpose was to allow Canadian vessels on the Great Lakes to trade between American ports.

On Sept. 1, 1916, the provisions of law requiring survey, inspection and measurement of foreign-built ships admitted to American registry were suspended for one year. In 1917 this was extended two years longer. An executive order of July suspended the law requiring officers of American vessels to be American citizens, and the Secretary of Commerce issued regulations under which aliens may obtain licenses to operate such vessels.

EXTERNAL COMMERCE OF THE UNITED STATES

Total Foreign Trade.—For the fiscal year ending June 30, 1917, official figures show the total value of imports and exports (including foreign exports) to have been $8,953,161,275, as compared with $6,531,366,395 in 1916[1] and $4,442,759,080 in 1915.

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[1] These figures differ from the YEAR BOOK for 1916 by reason of revision.

Thus, our foreign trade showed an increase in 1916 of approximately 47 per cent. over 1915 and in 1917 an increase of about 38 per cent. over 1916. In the period of two years since June, 1915, the value of the commerce of the United States with foreign nations has more than doubled. The period of the war has been one of continuous readjustment of commercial conditions, exports forming an ever-increasing percentage of the foreign trade under the stimulus of the conflict. The value of our exports alone in 1917 was almost equal to the value of both imports and exports in 1916 and far exceeded the total trade of 1915. The preceding table of the ratios of value of exports and imports to total foreign trade illustrates the enhanced value of the export portion of our commerce.

	Exports, Per Cent.	Imports, Per Cent.
1914	55.5	44.5
1915	62.3	37.7
1916	66.3	33.7
1917	70.3	29.7

Exports to Foreign Countries.—The increase of 56 per cent. in the value of total exports in 1916 as compared with 1915 was phenomenal for the United States, and naturally this rate could not be expected to continue. The fiscal year 1917 was nevertheless a year of great growth, the total value of exports (foreign and domestic) aggregating $6,293,806,090, as compared with $4,333,482,885 [1] in 1916, an increase of about 45 per cent. In the period of two years since June, 1915, the total value of exports has increased over 127 per cent. The exports of merchandise (foreign and domestic) by continents for the last four fiscal years are given in the following table:

EXPORTS OF MERCHANDISE, BY CONTINENTS

Continent	1914	1915	1916 [1]	1917
Europe	$1,486,498,729	$1,971,434,687	$2,999,305,097	$4,325,443,735
North America	528,644,962	477,075,727	733,024,674	1,164,451,184
South America	124,539,909	99,323,957	180,175,374	259,559,458
Asia	113,425,616	114,470,493	278,610,881	380,320,718
Oceania	83,568,417	77,764,725	98,775,828	111,284,128
Africa	27,901,515	28,519,751	43,591,031	52,746,867
Total	$2,364,579,148	$2,768,589,340	$4,333,482,885	$6,293,806,090

[1] These figures differ slightly from those given for 1916 in the YEAR BOOK for 1916 by reason of subsequent revision of the official figures.

It is evident from the above table that the value of exports to all continents increased in 1917. Augmented exports to Europe, however, accounted for over 67 per cent. of the total increase, although North American trade showed the greatest proportional growth. Exports of particular classes of goods and exports to certain countries have been somewhat affected by the licensing requirements which are described later. Seventy per cent. of the 1916 increase in exports was due to Great Britain, France, Canada and Italy, and in 1917 exports to these nations accounted for over 67 per cent. of the total increase in exports. Exports to Russia in Europe increased from $178,694,800 to $428,284,663. Exports to the Netherlands, which showed a decrease of 30 per cent. in 1916, went back to within $33,000,000 of the 1915 figures. The improvement in South American trade evident in 1916 continued during 1917, and in the latter year an increase in export values of more than 44 per cent. is apparent, making the 1917 figures more than 2½ times those of 1915. Trade with Belgium totalled $37,348,319 in 1917, but these figures include considerable relief supplies. The merchandise exports to various important markets are shown in the table on the following page.

A comparison of the exports to the Entente Allies and their possessions and dependencies, to the Teutonic Allies and their possessions, and to neutral nations is given in the following table; these figures naturally differ

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[1] These figures differ slightly from those given for 1916 in the YEAR BOOK for 1916 by reason of subsequent revision of the official figures.

EXPORTS OF MERCHANDISE, BY PRINCIPAL COUNTRIES

Market	1914	1915	1916[1]	1917
Germany	$344,794,276	$28,863,354	$288,899	$2,199,449
Great Britain	594,271,863	911,794,954	1,526,685,102	2,047,545,843
France	159,818,924	369,397,170	628,851,988	1,011,529,095
Canada	344,716,981	300,686,812	468,784,793	787,529,729
Netherlands	112,215,673	143,267,019	97,476,328	109,504,109
Italy	74,235,012	184,819,688	269,246,105	360,529,625
Mexico	38,748,793	34,164,447	47,945,519	78,659,893
Belgium	61,219,894	20,662,315	21,848,114	37,348,319
Cuba	68,884,428	75,530,382	127,198,578	178,883,248
Argentina	45,179,089	32,549,606	66,378,366	82,382,884
Japan	51,205,520	41,517,780	74,470,931	130,472,189

[1] These figures differ slightly from those given for 1916 in the Year Book for 1916 by reason of subsequent revision of the official figures.

from those in previous issues of the Year Book because of the change in status of several countries during the year; nations are grouped according to their status in November, 1917, and colonies of the Teutonic Allies are included among the possessions of the Entente Allies:

	1915	1916	1917
Entente Allies	$2,177,306,641	$3,729,897,562	$5,499,342,232
Teutonic Allies	31,108,633	521,593	2,366,964
Neutrals	560,174,066	603,063,730	792,096,894
Total	$2,768,589,340	$4,333,482,885	$6,293,806,090

The tendency in evidence during 1916 as regards exports of "crude foodstuffs and food animals" and "foodstuffs partly or wholly manufactured" continued during 1917. In 1915 the former group of commodities comprised 18.7 per cent. of the total export values; in 1916, 8.9 per cent. and in 1917, 8.5 per cent. The absolute value of this group, however, increased from $506,993,179 in 1915 to $532,017,592 in 1917. Manufactured foodstuffs formed 16.7 per cent. of the total export values in 1915, 14.0 per cent. in 1916 and 11.8 per cent. in 1917. During this period, nevertheless, this group advanced in absolute value from $454,575,404 to $739,037,884. Crude materials for use in manufacturing showed a gain of $196,436,609 during 1917, but declined in relative importance, contributing 12.55 per cent. to the total value in 1916 and only 11.7 per cent. in 1917. "Manufactures for further use in manufacturing" showed the greatest relative increase, contributing 19.1 per cent. of the total value as compared with 15.4 per cent. in 1916, while manufactures ready for consumption contributed the largest absolute gain, $945,624,963. The latter group had declined in value in 1915 but has since steadily increased. Miscellaneous exports accounted for 2.4 per cent. of the total value in 1916, and 1.5 per cent. in 1917. The total value of the exports of domestic merchandise since 1900 by groups of articles is shown on the following page.

During the year 1915 the extraordinary increase in total exports was accounted for principally by large gains in the foodstuffs group, the exports of war munitions and munition material having shown large percentage increases in value but comparatively insignificant absolute increases. In 1916 and 1917, however, the latter branch of trade became of exceptional importance. Together these products in 1917 contributed $1,648,628,363 to the total value of domestic exports, or over 25 per cent. Munitions and munition material both doubled in value during the fiscal year 1917. Foodstuffs also increased over 30 per cent., due to gains in breadstuffs, meat products and dairy products. War supplies, which showed a very greatly enhanced value in 1916, declined in 1917. Forage showed a gain of over 14 per cent., but in absolute amount this increase totalled only $9,895,043. Hides, leather and manufactures thereof showed practically no change, while textile manu-

IMPORTS AND EXPORTS OF MERCHANDISE, BY CLASSES

YEAR ENDED JUNE 30	Foodstuffs in Crude Condition, and Food Animals	Foodstuffs Partly or Wholly Manufactured	Crude Materials for Use in Manufacturing	Manufactures for Further Use in Manufacturing	Manufactures Ready for Consumption	Miscellaneous	Total
IMPORTS:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1900..	97,916,293	133,027,374	276,241,152	134,222,045	203,126,341	5,407,979	849,941,184
1901..	110,385,208	125,540,654	248,006,751	127,576,924	205,505,580	6,157,048	823,172,165
1902..	120,280,302	95,350,256	303,001,868	147,656,292	231,420,820	5,611,410	903,320,948
1903..	119,202,674	116,620,623	330,491,084	195,750,847	257,740,815	5,896,825	1,025,719,237
1904..	132,223,895	118,222,862	320,794,431	160,233,890	252,812,835	6,754,620	991,087,371
1905..	146,130,903	145,355,839	389,160,658	177,827,960	252,349,842	6,665,061	1,117,513,071
1906..	134,322,347	140,358,109	414,687,999	220,298,751	307,674,728	9,100,980	1,226,562,446
1907..	149,747,693	158,656,263	477,027,174	274,096,464	364,192,884	10,700,947	1,434,421,425
1908..	145,577,427	147,008,870	363,823,723	196,320,135	331,204,635	10,406,902	1,194,341,792
1909..	164,110,674	165,700,920	451,359,259	222,101,622	299,106,235	9,541,514	1,311,920,924
1910..	144,776,636	181,566,572	566,270,770	285,138,373	367,723,367	11,471,712	1,556,947,430
1911..	181,194,863	172,006,501	511,362,140	287,785,652	361,422,180	13,454,769	1,527,226,105
1912..	230,358,230	196,100,608	555,986,041	293,739,134	360,018,963	17,061,958	1,653,264,934
1913..	211,746,500	194,243,220	635,210,201	349,401,928	408,178,704	14,227,681	1,813,008,234
1914..	247,947,621	227,644,329	632,865,860	319,275,488	449,318,214	16,874,145	1,893,925,657
1915..	223,929,564	285,725,091	575,357,144	237,176,522	335,876,628	16,104,791	1,674,169,740
1916..	251,886,746	310,938,181	948,825,500	356,857,137	311,870,962	17,504,984	2,197,883,510
1917..	335,573,042	343,474,387	1,109,665,040	475,325,346	379,662,329	15,655,041	2,659,355,185
EXPORTS[1]							
1900..	227,347,193	318,126,502	325,589,000	152,890,591	331,955,684	14,854,601	1,370,763,571
1901..	246,394,140	336,605,378	397,767,463	148,013,625	317,764,367	13,917,833	1,460,462,806
1902..	184,786,389	328,831,350	373,595,243	131,918,311	321,946,540	14,404,028	1,355,181,861
1903..	185,308,064	323,244,697	408,442,137	140,666,864	327,468,629	7,100,911	1,392,231.302
1904..	135,747,224	308,836,077	461,424,464	174,876,659	348,734,801	5,559,792	1,435,179,017
1905..	118,185,098	283,065,098	472,114,493	209,926,174	402,049,798	6,403,980	1,491,744,641
1906..	177,216,467	347,385,463	500,536,700	226,210,513	459,812,655	6,791,584	1,717,953,382
1907..	167,348,227	345,706,609	593,145,135	259,442,028	480,681,423	7,394,612	1,853,718,034
1908..	189,051,824	331,961,663	556,681,462	261,105,883	489,469,958	6,515,567	1,834,786,357
1909..	135,693,409	302,555,341	520,907,436	231,186,607	440,229,407	7,783,393	1,638,355,593
1910..	109,828,320	259,259,654	565,934,957	267,765,916	499,215,329	8,079,822	1,710,083,998
1911..	103,401,553	282,016,883	713,018,206	309,151,989	598,367,852	7,592,542	2,013,549,025
1912..	99,899,270	318,838,493	723,008,839	348,149,524	672,268,163	8,155,539	2,170,319,828
1913..	181,907,266	321,204,373	731,758,513	408,806,949	776,297,360	8,531,897	2,428,506,358
1914..	137,495,121	293,218,336	792,716,109	374,224,210	724,908,000	7,122,249	2,329,684,025
1915..	507,003,179	454,565,404	510,455,540	355,862,329	807,465,511	80,826,502	2,716,178,465
1916..	380,638,102	599,059,151	535,952,043	657,923,305	1,998,298,249	100,306,729	4,272,177,579
1917..	532,017,592	739,037,884	732,388,652	1,191,787,957	2,943,923,212	91,613,998	6,230,769,295

[1] Exports of domestic merchandise only.

factures in 1917 aggregated only about 93 per cent. of their value in 1916. The latter result was due entirely to an enormous decline in the export value of manufactured wool, cotton textiles showing a further increase. Figures of all the products mentioned, except woolen manufactures, are still far in excess of normal as is shown in the following table:

	1915	1916	1917
Foodstuffs [1]	$904,098,619	$931,711,463	$1,216,020,495
Munitions [2]	50,027,056	481,490,760	894,771,303
Materials for munitions [3]	95,852,627	368,151,757	753,857,060
War supplies [4]	284,669,125	379,599,628	407,962,526
Hides, leather and manufactures thereof[5]	96,621,807	124,604,413	124,551,664
Forage [6]	78,356,631	67,171,785	77,066,828
Textile manufactures [7]	99,300,948	166,036,890	154,677,418
Total	$1,608,926,813	$2,518,766,696	$3,628,907,294

[1] Includes total foodstuffs except oats.

[2] Includes firearms and explosives, except dynamite.

[3] Includes zinc and zinc manufactures, lead and lead manufactures, brass and brass manufactures, iron rods, steel billets, metal-working machinery and sulphuric acid.

[4] Includes horses, mules, harness and saddles, aeroplanes, commercial automobiles, automobile tires, wagons, barbed wire, horseshoes, and surgical apparatus.

[5] Includes hides, sole leather, uppers, other leather, men's shoes and other manufactured leather.

[6] Includes hay, oats and oil cake.

[7] Includes cotton manufactures and woolen manufactures.

The prosperity of 1916 in exports in general continued during the fiscal year 1917 and to an even greater degree. With a few exceptions exports of all important commodities increased in value, and several which were below normal regained their usual figures. The following table gives the figures for a number of the most important export articles:

	1914	1916	1917
Brass and manufactures of	$7,472,476	$164,876,044	$383,291,964
Breadstuffs	165,302,385	435,679,323	589,234,737
Cars and carriages	51,676,222	167,743,843	166,504,339
Cotton (unmanufactured)	610,475,301	374,186,247	543,100,542
Cotton manufactures	51,467,233	112,053,235	136,253,858
Explosives	6,272,197	467,081,928	802,789,437
Leather and tanned skins and manufactures	57,466,261	146,703,815	153,711,912
Oil cake, etc	21,667,672	28,561,303	31,286,840
Spirits, wines and malt liquors	4,134,420	12,577,611	20,875,950
Tobacco manufactures	7,489,811	6,944,347	15,552,544
Vegetables	6,936,400	15,952,412	22,290,710
Wool manufactures	4,790,087	53,983,655	18,423,556
Zinc and manufactures of	406,208	45,867,156	66,108,586
Agricultural implements	31,965,789	17,611,297	26,552,826
Fertilizers	11,978,738	5,343,497	6,971,011
Furs and fur skins	14,969,371	9,288,786	15,729,160
Naval stores	19,882,165	13,503,607	15,607,311
Tobacco, unmanufactured	53,963,670	53,365,195	59,954,239
Wood, and manufactures of	103,179,640	60,661,774	62,817,451
Chemicals, drugs, dyes	27,079,092	124,478,474	187,846,351
Coal, hard and soft	59,921,013	65,955,709	83,119,233
Copper and manufactures	146,222,556	173,946,226	322,284,174
Fruits and nuts	31,850,392	36,965,228	39,394,197
India-rubber manufactures	12,441,220	35,153,374	31,110,394
Iron and steel and manufactures	251,480,677	621,237,972	1,129,341,616
Oils, mineral	152,174,056	166,416,922	230,953,149
Oils, vegetable	16,251,486	27,165,026	26,280,019
Paper and manufactures thereof	20,663,634	29,107,386	43,161,701
Meat products	143,261,846	266,642,108	354,736,767

Actual decreases in value are apparent in india-rubber manufactures, vegetable oils, cars and carriages and manufactures of wool, the latter suffering the only decline of great extent. Agricultural implements, fertilizers and raw cotton, while showing increases over 1916, did not reach the figures of 1914. (See also XVI, *Statistics of Agriculture;* XVII, *Statistics of Mineral Production,* and XVIII, *Manufactures.*)

In addition to merchandise, gold was exported to the value of $291,921,225, as compared with $90,249,548 in 1916, and silver to the value of $78,279,931, as compared with $59,791,523 in 1916. (See also XII, *Economic Conditions;* and XIII, *Banking and Currency.*)

A large part of the increase in value of exports must be attributed to an increase in price rather than to an increase in quantities shipped, as may be judged from the fact that of 76 articles for which official figures furnish monthly export prices, only four showed a decrease in price and nearly all showed substantial increases. Index numbers given elsewhere in the YEAR BOOK (See XII, *Economic Conditions*) show the enormous increase in prices which has taken place.

Exports by Groups of Ports.—Official statistics show the following exports from the various groups of customs districts for the fiscal year ending June 30, 1917:

	1916[1]	1917
Atlantic Coast	$3,039,147,369	$4,398,505,184
Gulf Coast	485,403,919	685,634,662
Mexican Border	20,510,636	33,130,282
Pacific Coast	273,193,851	334,371,716
Northern Border	515,227,110	842,164,246
Interior Ports	....	....
Total	$4,333,482,885	$6,293,806,090

[1] Figures revised since issue of the YEAR BOOK for 1916.

A general increase in exports from all groups of ports occurred during 1917, the northern border showing the greatest proportionate increase. Even the Gulf Coast ports, which had steadily declined in importance since 1914, showed a gain of over $200,000,000 during the fiscal year.

Exports to American Dependencies.

—Shipments to non-contiguous territories of the United States were valued at $158,264,157 in 1917, as compared with $116,123,797 in 1916 and $100,538,956 in 1915. Every territory with the exception of Guam and Tutuila showed an increase in the value of merchandise received from the United States. Alaska, Hawaii, Porto Rico and the Philippines showed gains of 45, 43, 38, and 17 per cent., respectively. The territorial export trade in 1917 exceeded in importance the exports of the United States to any one of the foreign markets of Denmark, Spain, Sweden, Mexico or the Netherlands, and Hawaii stands superior as an export market to the British West Indies, Peru, Uruguay, Venezuela or China. Shipments to the non-contiguous territories of the United States in 1916 and 1917 are shown in the table (see also VII, *Territories and Dependencies*).

	1916[1]	1917
Alaska	$26,502,311	$38,427,618
Hawaii	30,825,187	43,967,256
Porto Rico	34,927,311	48,134,386
Philippines	23,359,065	27,323,596
Guam	282,085	189,477
Tutuila	227,838	221,824
Total	$116,123,797	$158,264,157

[1] Figures revised since issue of the YEAR BOOK for 1916.

Imports from Foreign Countries.—The steady increase in imports since 1911, save for the year 1915, continued during 1917. The total value in the fiscal year ending June 30, 1917, was $2,659,355,185, as compared with $2,197,883,510 in 1916, an increase of 21 per cent. The figure for the fiscal year 1917 was the highest ever recorded. Aside from Europe, Africa and Oceania imports have everywhere increased in value in spite of shipping and other difficulties. The distribution of imports by continents was as follows:

IMPORTS OF MERCHANDISE, BY CONTINENTS

Continent	1914	1915	1916	1917
Europe	$895,602,868	$614,354,645	$616,252,749	$610,470,670
North America	427,399,354	473,079,796	591,895,543	766,112,537
South America	222,677,075	261,489,563	391,562,018	542,212,820
Asia	286,952,486	247,770,103	437,181,464	615,217,463
Oceania	42,144,398	52,522,552	96,225,991	65,328,379
Africa	19,149,476	24,953,081	64,765,745	60,013,316
Total	$1,893,925,657	$1,674,169,740	$2,197,883,510	$2,659,355,185

European imports continued their steady decline in relative importance. Since 1911 they have annually formed the following percentages of the import total: 50, 49, 47, 37, 28, and in 1917, 23 per cent. Imports from North America formed approximately 29 per cent. of the total during 1917, the trade with every North American nation having increased, while Oceania and Africa decreased in importance both absolutely and relatively. Chile, Argentina and Dutch Guiana were largely responsible for the South American increase.

The following table shows the imports from belligerent and neutral countries in 1915, 1916 and 1917:

	1915	1916	1917
Entente Allies	$1,175,451,602	$1,634,022,841	$1,905,058,654
Teutonic Allies	113,676,680	16,336,558	2,086,460
Neutrals	385,041,458	547,524,111	752,210,071
Total	$1,674,169,740	$2,197,883,510	$2,659,355,185

The value of the imports from the principal countries since 1914 is shown in the table on the next page.

The year 1915 was one of general decrease in imports from the principal countries, and 1916 was a period of general increase in imports from these countries. In 1917 the majority of our important sources of supply showed a gain, but decreases were evident in Great Britain, Italy and British Oceania. Argentina has become one of the most important sources of imports, and China, Straits Settle-

Country	1914	1915	1916	1917
Great Britain	$293,661,304	$256,351,675	$308,443,223	$307,674,853
France	141,446,252	77,158,740	102,077,620	108,069,706
Brazil	101,329,073	99,178,728	132,663,984	151,638,245
Cuba	131,303,794	185,706,901	228,977,567	253,395,410
Canada	160,689,709	159,571,712	204,018,227	320,949,492
Japan	107,355,897	98,882,638	147,644,228	208,127,478
Italy	56,407,671	54,973,726	57,432,436	46,374,368
Mexico	92,690,566	77,612,691	97,676,544	112,138,677
British India	73,630,880	51,982,703	71,745,626	102,106,682
Argentina	45,123,988	73,776,258	112,512,420	152,612,411
Chile	25,722,128	27,689,780	64,154,859	113,789,130
China	40,311,340	40,829,710	72,405,278	112,022,104
Straits Settlements	26,307,860	24,989,878	82,114,598	89,984,946
Dutch East Indies	5,334,361	9,245,784	27,716,589	62,011,236
Philippines	18,162,312	24,020,169	28,232,249	42,436,247

ments and Chile have increased the importance gained in 1916. Of the countries of lesser importance not mentioned in the above table the following rank in the order given: Spain, Peru, Netherlands, Uruguay, Egypt, Colombia, British Africa, Sweden, Switzerland, British Oceania.

All of the great groups of imports, with the exception of the miscellaneous group, showed an increase in total value during 1917. As was the case in 1916, crude materials for use in manufacturing showed the greatest absolute gain, $160,839,540. Foodstuffs in crude condition and manufactures for further use in manufacturing showed the greatest relative gains. In spite of the great absolute increase in crude materials for use in manufacturing, this group furnished only 41.7 per cent. of the total import values in 1917, as compared with 43.1 per cent. in 1916 and 34.3 per cent. in 1915. Foodstuffs in crude condition formed 12.6 per cent. of the total imports, as compared with 11.4 per cent. in 1916. Foodstuffs partly or wholly manufactured decreased somewhat in importance, contributing 14.1 per cent. in 1916 and only 12.9 per cent. in 1917. Manufactures for further use in manufacturing resumed the increase in importance which has been apparent since 1915, and this group now furnishes 17.8 per cent. of the total value, as compared with 16.2 per cent. in 1916 and 14.1 per cent. in 1915. Manufactures ready for consumption retained approximately their relative position of 1916. As was the case in 1916, practically all the important articles of import showed increased value, among them being breadstuffs, bristles, chemicals, cocoa, coffee, copper, cotton and cotton products, dyewoods, explosives, fibres and fibre products, fruits and nuts, furs, hats, hides and skins, india rubber, iron and steel manufactures, lead, leather and tanned skins and manufactures thereof, mineral and vegetable oils, paper and manufactures thereof, graphite, precious stones, raw and manufactured silk, spirits, wines and liquors, sugar, molasses, tobacco manufactures, vegetables, wood and wood manufactures and woolen manufactures. On the other hand certain important articles declined in value, including animals, cars and carriages, feathers, fertilizers, glass and glassware, meat and dairy products, spices, tea, tobacco leaf, and unmanufactured wool. (See also XVI, *Statistics of Agriculture;* XVII, *Statistics of Mineral Production;* and XVIII, *Manufactures.*)

The increase in the imports of gold coin and bullion, was enormous in 1917, such imports having a value double those of 1916. These imports totalled $977,176,026 during 1917, as compared with $494,009,301 in 1916. This is the largest figure for gold imports in our history. In addition, silver valued at $35,003,563 was imported, as compared with $34,154,375 in 1916. (See also XII, *Economic Conditions;* and XIII, *Banking and Currency.*)

Imports by Groups of Ports.—The increase in the value of imports in 1917 was general at all the principal ports of the United States, the largest absolute increase being recorded at the Atlantic Coast ports and the largest relative increases at the northern and Mexican borders. The table on the following page shows the distribution of the imports of 1917 among the various groups of ports:

	1916	1917
Atlantic Coast...	$1,562,179,535	$1,763,466,262
Pacific Coast.....	262,975,769	358,858,637
Northern Border..	214,196,786	338,349,328
Gulf Coast......	110,154,169	128,349,000
Interior Ports....	14,580,134	20,997,652
Mexican Border..	33,797,117	49,334,306
Total.......	$2,197,883,510	$2,659,355,185

Imports from American Dependencies.—The value of merchandise imported from the non-contiguous territories of the United States during the fiscal year ending June 30, 1917, is shown in the table below:

	1916	1917
Alaska............	$48,965,477	$60,135,205
Hawaii............	64,389,597	74,365,938
Porto Rico........	60,906,453	73,062,221
Philippines........	28,232,249	42,436,247
Guam.............	....	....
Tutuila...........	....	....
Total.........	$202,493,776	$249,999,611

Imports from the dependencies have shown a steady increase since 1914, gaining 35 per cent. in value in 1915, 30 per cent. in 1916 and 23 per cent. in 1917. A feature of the import trade with the dependencies has been the steady decline of Hawaii in relative importance since 1914. In 1916 it contributed 32 per cent. of the total import value and in 1917 30 per cent. Alaska and the Philippine Islands have meanwhile been increasing in relative importance, the former contributing 24.5 per cent. of the total imports in 1917, as compared with 24 per cent. in 1916, and the latter, 16.9 per cent. in 1917, as compared with 13.9 per cent. in 1916. Porto Rico has now become of equal importance with Hawaii as a source of imports. The total domestic imports from these dependencies exceeded the total exports to them by $91,735,454. Foreign merchandise valued at $803,779 and gold and silver valued at $20,111,789 were also received from the non-contiguous territories. Of the latter 79 per cent. was furnished by Alaska. (See also VII, *Territories and Dependencies.*)

The Balance of Trade.—The following official figures, which include receipts and shipments of both merchandise and specie, indicate the changes in the balance of trade for the past 17 years (See also XII, *Economic Conditions*):

Fiscal Year	Merchandise			Merchandise and Specie		
	Imports	Exports[1]	Excess of Exports	Imports	Exports	Excess of Exports
1900.....	$849,941,184	$1,394,483,082	$544,541,898	$929,770,670	$1,499,462,116	$569,691,446
1901.....	823,172,165	1,487,764,991	664,592,826	925,609,873	1,605,235,348	679,625,475
1905.....	1,117,513,071	1,518,561,666	401,048,595	1,198,646,897	1,660,004,502	461,357,605
1906.....	1,226,562,446	1,743,864,500	517,302,054	1,367,226,716	1,848,307,154	481,080,438
1907.....	1,434,421,425	1,880,851,078	446,429,653	1,591,878,298	1,988,989,327	397,111,029
1908.....	1,194,341,792	1,860,773,346	666,431,554	1,387,337,210	1,991,127,472	603,790,262
1909.....	1,311,920,224	1,663,011,104	351,090,880	1,399,879,023	1,810,225,714	410,346,691
1910.....	1,556,947,430	1,744,984,720	188,037,290	1,645,504,529	1,918,834,796	273,330,267
1911.....	1,527,226,105	2,049,320,199	522,094,094	1,646,770,367	2,136,579,810	489,809,443
1912.....	1,653,264,934	2,204,322,409	551,057,475	1,749,251,653	2,326,541,422	576,289,769
1913.....	1,813,008,234	2,465,884,149	652,875,915	1,923,470,775	2,615,261,082	691,790,307
1914.....	1,893,925,657	2,364,579,148	470,653,491	1,990,790,920	2,531,582,700	540,791,780
1915.....	1,674,169,740	2,768,589,340	1,094,419,600	1,874,848,818	2,965,755,675	1,090,906,857
1916.....	2,197,883,510	4,333,482,885	2,135,599,375	2,726,047,186	4,483,523,956	1,757,476,770
1917.....	2,659,355,185	6,293,806,090	3,634,450,905	3,671,534,774	6,664,007,246	2,992,472,472

[1] Including both foreign and domestic.

Government Control of Exports.—By the Espionage Act of June 15, 1917 (see I, *The Sixty-fifth Congress*), the President was given control over the export trade. In pursuance of the Act an Export Council, Administrative Board and Licensing Division were created, with representatives in various important cities. The Administrative Board personnel was later changed slightly and it became the War Trade Board, consisting of one representative each from the Departments of State, Agriculture, Commerce and Treasury, the Food Administration and the Shipping Board. In addition to the Bureau of Export Licenses, the Board created Bureaus of Imports, of Transportation, of Enemy Trading and of

War Research. The Board has powers not only over exports but also over licenses for goods coming within the Trading with the Enemy Act, licenses to carry on foreign businesses in the United States, and imports to which control may be extended in the future. The agencies mentioned were to issue licenses for the exportation of certain goods to foreign countries, export of such goods being prohibited without a license. A statement of the President announced that the policy followed would be (1) amelioration of food conditions in the United States, (2) conservation of raw materials for military and naval purposes, (3) distribution of surplus according to needs of countries at war with Germany, and (4) coöperation as far as possible with neutrals. Various articles coming within the above restrictions were listed from time to time, and on Aug. 27 exports were divided into two classes, (1) exports to enemy and neutral countries and (2) exports to all other countries. The list of articles in the first-named trade for which licenses are required includes all kinds of goods. On Oct. 10 a long list of more than 600 articles was promulgated, which articles henceforth may be exported without licenses to neutral countries outside of Europe. The list of articles for export to our allies for which licenses are required was successively extended until it included practically every class of export of any importance. It was the practice to license such exports freely until September, when the Administrative Board prepared a "conservation list" of articles which were to receive license only when their export would contribute directly to war purposes. This list also was successively extended. Licenses for export are furnished upon application and it is the duty of the exporter to inquire whether or not his goods require a license. The license is good for 60 days. For certain shipments letters of assurance from the British Embassy are still necessary in addition to the license. (See also II, *International Relations;* and XII, *Conduct of Business.*)

The exportation of coin, bullion and currency on and after Sept. 10, was forbidden in the President's proclamation of Sept. 7, except with the consent of the Federal Reserve Board and the approval of the Secretary of the Treasury (see also XI, *Banking and Currency.*)

Trading With the Enemy Act.—On Oct. 6, the Trading with the Enemy Act was approved by the President, designed to (1) impose penalties on trading which is illegal by international law, (2) extend these penalties to other enumerated acts, and (3) control enemy property within the United States. Among its provisions there is a prohibition against dealing with persons resident in countries at war with the United States or persons doing business in countries at war with the United States. Provision is made regarding contracts entered into before the war, contracts entered into after war began but before the passage of the Act, and assignments and transfers of the same. Transactions in foreign exchange, and transfers of coin, bullion and credit are subject to investigation and regulation by the President. The President may place an embargo on imports, and may establish a censorship of communications by mail, cable, wireless between foreign countries and the United States of America. (See also XII, *Conduct of Business.*)

INLAND WATERWAYS AND COASTWISE COMMERCE

Domestic Trade of the Great Lakes.—The official figures of the traffic passing through the American and Canadian Sault Ste. Marie canals in the calendar year 1915, provided by the Chief of Engineers, U. S. Army, are shown on the following page; figures for 1916 are not yet available.

The total freight tonnage passing through the Sault Ste. Marie canals for the year 1915 thus amounted to 71,290,304 short tons, as compared with 55,369,934 tons in 1914 and 79,718,344 tons in 1913. This is an increase over 1914 of 15,920,370 tons, or 29 per cent. Increases are evident in the wheat, copper, iron-ore, lumber and general-merchandise tonnage. The total traffic of the St. Mary's Falls (American) Canal for the year

Commodities	1914	1915
Coal, short tons	14,487,221	13,357,058
Flour, bbl	9,715,085	8,436,937
Wheat, bu	150,284,095	255,481,558
Other grain, bu	68,338,072	64,786,870
Manufactured and pig iron, short tons	239,683	211,781
Salt, bbl	777,208	699,337
Copper, short tons	91,764	156,436
Iron ore, short tons	31,413,765	45,213,604
Lumber, board-feet	452,148,000	456,451,000
General merchandise	1,317,304	1,595,398
Total, short tons	55,369,934	71,290,304

1915 was 63,548,993 tons, or 89 per cent. of the total traffic, as compared with 27,771,467 short tons in 1914 and 37,022,201 short tons in 1913. The number of vessel passages of the American and Canadian canals was 21,233, or 2,516 more than 1914, and the vessel tonnage increased by 14,412,808 tons, amounting in 1915 to 56,399,147 tons. To this total tonnage steamers contributed 67,098,814 tons, sailing and unrigged vessels, 4,091,056 tons, and unregistered vessels, 100,434 tons.

Statistics of the commerce passing through the Detroit River are available for 14 consecutive years and up until the year 1914 had shown a rapid increase. This increase in vessel tonnage and cargo tonnage and value was continued in 1915. The following table shows the number of passages, net registered tonnage, estimated freight tonnage and value, for the years 1902 to 1915, inclusive:

	Number of Passages	Net Registered Tons	Freight Tons (estimated)	Estimated Value
1902	33,000	39,328,689	44,260,506	$440,834,640
1903	33,113	37,453,796	46,817,245	471,917,830
1904	29,472	33,049,984	42,792,326	453,598,656
1905	35,599	45,912,622	55,508,360	522,888,751
1906	35,128	50,673,897	63,808,571	662,971,053
1907	34,149	53,959,769	71,226,895	697,311,302
1908	27,883	40,628,850	54,086,750	614,425,480
1909	32,296	54,668,846	67,789,369	732,803,079
1910	33,638	58,821,282	73,526,602	771,294,055
1911	30,612	52,142,703	66,951,231	745,167,201
1912	33,675	61,606,271	78,671,208	859,089,501
1913	37,473	62,092,149	85,376,705	927,191,016
1914	31,913	52,927,106	69,810,853	800,032,375
1915	34,823	65,280,425	82,514,457	1,021,528,978

Vessels to the number of 1,054 used this passage during 1915, as compared with 1,041 in 1914 and 1,156 in 1913. Of the total in 1915, 866 were steamers, 189 sailing vessels and 17 gasoline boats. The average tonnage of all vessels using the Detroit River was 2,438 tons, as compared with 2,002 tons in 1914.

Combination of Lake Tonnage.— Practically all of the bulk-freight carriers on the Great Lakes, comprising about 400 ore-, coal- and grain-carrying vessels, will be mobilized during the lake season of 1918 and operated under one management. Eighty-five per cent. of the membership of the Lake Carriers Association have so voted, and this Association's membership controls more than 90 per cent. of the tonnage on the Great Lakes. The committee which will have charge of the operation of this great fleet consists of five managers of the largest bulk-carrying steamship companies on the Lakes. Subcommittees will have charge of particular branches of the business, and the Association will coöperate closely with the Government.

New York State Canals. — The value of the products transported on the New York State canals declined from $30,610,670 in 1915 to $27,513,525 in spite of the effect of rising prices because of a decrease of 233,064 tons or 12.5 per cent. Two causes are assigned for the decrease in tonnage and value of products transported, namely, the decreasing number of suitable canal boats and the withdrawal of approximately 200 boats heretofore available to be used for storage purposes in New York harbor. This was for the purpose of relieving the congestion of freight at New York. Of the total value of products transported, forest products comprised 21 per cent., agricultural products 24 per cent., manufactures 6 per cent., merchandise 38 per cent. and miscellaneous 11 per cent. Forest products transported increased relatively in importance, judged from the standpoint of value, while manufactures and merchandise relatively declined. Of the freight tonnage moved via the Erie Canal, about 24 per cent. consisted of through freight and 76 per cent. way freight, while in 1915 the respective percentages were 18 and 82. The way freight on the Champlain Canal comprised 48 per cent. of the total tonnage, approximately the same proportion as in 1915. The following table shows the traffic of the New York canals since 1900:

	Tonnage on New York State Canals					Total Quantity	Total Value
	Erie	Champlain	Oswego	Cayuga and Seneca	All Others		
1900........	2,145,876	972,867	31,742	130,126	65,330	3,345,941	$84,123,772
1906........	2,385,491	740,983	172,228	164,874	77,331	3,540,907	66,501,417
1907........	2,415,548	678,506	143,277	112,570	58,013	3,407,914	63,903,970
1908........	2,177,443	614,762	92,831	81,029	85,812	3,051,877	54,511,509
1909........	2,031,307	732,125	121,717	84,957	146,430	3,116,536	59,081,572
1910........	2,023,185	684,027	110,079	80,125	175,996	3,073,412	59,042,178
1911........	2,031,735	770,668	113,891	98,854	81,920	3,097,068	49,577,629
1912........	1,795,069	590,723	83,580	80,753	55,991	2,606,116	38,444,617
1913........	1,788,453	554,892	61,554	149,874	47,262	2,602,035	36,865,451
1914........	1,361,764	492,014	55,705	128,698	42,669	2,080,850	28,277,991
1915........	1,155,235	503,030	142,312	26,384	31,153	1,858,114	30,610,670
1916........	917,689	506,528	135,948	44,421	20,464	1,625,050	27,513,525

On May 15, 1916, the new barge canal channel from the Hudson River westerly a distance of 86 miles to Jacksonburg was opened to navigation. On the Erie Canal during the seasons of 1916, 184 miles of improved and 168 miles of unimproved channel have been in use. Public terminal docks have been provided at Albany, Troy, Waterford, Crescent, Schenectady, Amsterdam, Fort Plain, Fonda, Little Falls, Herkimer, Ilion, Frankfort, Utica, Rome, Spencerport, Holley and Lockport, and construction work is in progress elsewhere.

Panama Canal Traffic.—The traffic of the Panama Canal during the fiscal year ending June 30, 1917, was heavier than during any previous year. The number of vessels making the passage of the canal was 1,876, as compared with 787 during the fiscal year 1916. The net tonnage of these vessels in 1917 aggregated 6,009,356 tons, as compared with 2,479,762 in the preceding fiscal year. They carried 7,229,255 tons of cargo in 1917, as compared with 3,140,046 in 1916. The monthly and yearly traffic statistics are given in the following table:

TRAFFIC OF THE PANAMA CANAL

Months	Eastbound		Westbound		Total Traffic	
	Vessels	Cargo(tons)	Vessels	Cargo(tons)	Vessels	Cargo(tons)
1916						
July........	73	352,863	76	296,094	149	648,957
August........	65	270,672	77	246,149	142	516,821
September........	85	437,509	69	224,661	154	662,170
October........	84	416,877	74	231,016	158	647,893
November........	76	320,325	72	198,718	148	519,043
December........	73	305,696	82	241,987	155	547,683
1917						
January........	98	425,254	77	246,139	175	671,393
February........	72	313,462	68	244,307	140	557,769
March........	73	255,899	80	315,920	153	571,819
April........	77	305,049	82	322,656	159	627,705
May........	106	423,101	62	194,002	168	617,103
June........	89	325,705	86	315,194	175	640,899
Total for Fiscal year 1917....	971	4,152,412	905	3,076,843	1,876	7,229,255
Total for Fiscal year 1916....	576	1,705,810	411	1,434,236	787	3,140,046
Total for Fiscal year 1915....	358	2,844,057	530	2,125,735	1,088	4,969,792

As is shown in the accompanying table, the most pronounced increases in canal traffic have been in the trade between the United States and the west coast of South America, the Orient and Australasia; between Europe and these Pacific countries; and between the Atlantic terminus of the canal and South American points. The trade between Europe and the west coast of the United States was of an appreciable volume but was smaller than during the first year of canal operation. The coastwise traffic between the two seaboards of the United States has all but disappeared. Practically all the vessels formerly engaged in this coast-to-coast trade are now engaged in the foreign trade, where freight rates are unusually attractive. The traffic of the canal during the fiscal year 1916 and the first half of the fiscal year 1917, classified by origin, destination and direction of travel, is shown in the following table:

Route	Atlantic to Pacific				Pacific to Atlantic			
	Fiscal year 1916		First half fiscal year 1917		Fiscal year 1916		First half fiscal year 1917	
	Vessels	Tons of Cargo	Vessels	Tons of Cargo	Vessels	Tons of Cargo	Vessels	Tons of Cargo
Coastwise	50	227,103	9	54,166	41	217,285	9	45,947
United States—South and Central America	56	265,659	82	364,209	115	709,049	150	962,430
United States—Far East and Australasia	99	706,896	91	623,332	20	109,213	25	171,987
Atlantic terminus of canal—South America	73	75,351	104	118,423	78	109,911	110	167,652
Europe—West Coast of North America	20	51,645	11	49,218	34	178,807	31	196,937
Europe—West Coast of South America	14	45,070	23	78,588	48	309,436	74	416,907
Europe—Far East and Australia	....	....	10	68,981	....	....	18	98,427
Miscellaneous routings	14	62,512	18	81,708	15	72,109	10	43,655
Vessels in ballast	85	....	102	....	25	....	29	....
Totals	411	1,434,236	450	1,438,625	376	1,705,810	456	2,103,942

The tolls collected from vessels passing through the Panama Canal from its opening until Jan. 1, 1917, amounted to $9,461,717. Operating and maintenance expenses during the same period totaled $14,717,072, leaving an operating deficit of $5,255,355, or over 55 per cent. During the first six months of the fiscal year 1917, toll collections were $2,703,885, while operating and maintenance expenses were $3,428,163. Current operating and maintenance expenses during this half year exceeded toll collections by $724,279, or less than 27 per cent.

EXPRESS COMPANIES

Official figures of the Interstate Commerce Commission show that nine leading express companies (enumerated in the table below) operated over an average of 207,139 miles in the fiscal year ending June 30, 1916, as compared with 301,894 in 1915. Their aggregate gross receipts from operation were $179,206,649 in 1916, in comparison with $148,994,959 in 1915 and $168,880,923 in 1914, an increase of over 20 per cent. in 1916 as compared with 1915. Payments for the express privilege increased from $73,507,563 in 1915 to $87,971,136 in 1916, but total operating revenue nevertheless advanced from $75,487,396 to $91,235,513. Operating expenses advanced from $71,529,981 to $79,092,073, but the net operating income of the nine companies rose from $3,957,415 to $12,143,440. The table on the following page shows the principal items for the nine express companies in the fiscal year ending June 30, 1916.

The operating income (net operating revenue minus express taxes and uncollectible revenues from transportation) of these companies in the

Company	Gross Receipts from Operation	Cost of Express Privileges	Total Operating Revenues	Operating Expenses	Net Operating Revenues
Adams	$42,983,420	$20,886,134	$22,097,286	$19,918,779	$2,178,507
American	60,769,406	28,788,259	31,981,147	28,150,236	3,830,911
Canadian	4,004,376	1,990,328	2,014,048	1,698,508	315,540
Globe [1]	1,373	447	926	6,189	5,263 [2]
Great Northern	3,443,787	2,062,411	1,381,376	1,080,023	301,353
Northern	3,097,163	1,652,671	1,444,492	1,081,061	363,431
Southern	16,861,863	8,488,216	8,373,647	6,637,119	1,736,528
Wells Fargo & Co	46,569,567	23,414,248	23,155,319	19,847,688	3,307,631
Western	1,475,694	688,422	787,272	672,470	114,802
Total	$179,206,649	$87,971,136	$91,235,513	$79,092,073	$12,143,440

[1] Discontinued active operations on all lines April 30, 1915.
[2] Deficit.

fiscal year 1916 amounted to $10,560,714, as compared with $2,556,211 in 1915. Their net income, accounting for all expenses and all sources of income, advanced from $4,833,828 in 1915 to $13,081,188 in 1916.

Preliminary returns for the first six months of the calendar year 1917 indicate that although the traffic of the express companies has increased greatly, their net revenues declined somewhat because of increasing operating expenses and taxes. For the seven months, ending July, 1917, operating income fell from $5,161,428 to $1,192,340. As a consequence the principal companies made application to the Interstate Commerce Commission on Nov. 15, for an increase of 10 per cent. in their rates. They referred particularly to the difficulty of obtaining necessary labor, the increasing use of express and baggage cars for the movement of troops and military supplies, and the difficulty of obtaining adequate equipment.

THE POST OFFICE

Cost of Postal Service.—The total revenues, expenditures and excess receipts and payments of the Post Office, as reported by the Post Office Department, are shown for the years since 1900 in the table below:

	Postal Revenues	Postal Expenditures	Deficit
1900	$102,354,579	$107,740,267	$5,385,688
1905	152,826,585	167,399,169	14,572,584
1906	167,932,782	178,449,778	10,516,996
1907	183,585,005	190,238,288	6,653,283
1908	191,478,663	208,351,886	16,873,223
1909	203,562,383	221,004,103	17,441,720
1910	224,128,657	229,977,224	5,848,567
1911	237,879,823	237,648,926	230,897 [1]
1912	246,744,015	248,525,450	1,781,435
1913	266,619,525	262,067,541	4,551,984 [1]
1914	287,934,565	283,543,769	4,390,796 [1]
1915	287,248,165	298,546,026	11,297,861
1916	312,057,689	306,204,033	5,853,656 [1]

[1] Excess revenue.

Examination of the figures shows that while in 1915 a deficit appeared, due to a halt in the postal receipts because of the European War, the receipts in 1916 showed an increase of $24,809,524, or 8.63 per cent., while expenditures increased only $7,658,007, or 2.56 per cent. The year 1916, therefore, shows a surplus of $5,853,656. This is the largest surplus in the history of the Department and is the third within the past four fiscal years. The distribution of expense among the various services is shown on the following page.

Nature of the Various Services.—The length, annual travel and rate of expenditure for the various classes of mail services other than star routes are shown for the fiscal year ending June 30, 1916, in the table which follows. As the total rate of

	1900	1914	1915	1916
Service in post office	$51,214,498	$134,633,166	$139,936,546	$143,372,139
Railway mail service	8,839,767	26,265,352	28,408,243	28,515,475
Rural delivery service	420,499	47,443,711	49,805,851	51,964,735
Railway mail pay	37,315,724	56,155,496	59,576,288	61,692,461
Other means of transportation	7,794,212	15,037,105	17,337,637	17,239,945
Transportation of foreign mail	2,155,567	3,768,101	3,273,436	3,117,985

expenditure of 1915 was $99,271,535, the year 1916 shows an increase of $3,395,286, or 3.5 per cent. This was accounted for almost entirely by an increase in the rate of expenditure on railroad routes. The inland service cost was $99,402,000 in 1916, as compared with $96,196,660 in 1915, thus showing an increase in 1916 of about 3.3 per cent. Increased cost of the foreign mail service may be ascribed to an increase of 17.5 per cent. in the weight of mails dispatched by sea.

POSTAL SERVICES

	Number	Aggregate Length (Miles)	Annual Travel (Miles)	Annual Rate of Expenditure
Star routes in Alaska	21	4,544.00	249,331.10	$260,518.50
Steamboat routes	260	32,481.35	5,470,272.24	937,893.54
Mail-messenger routes	8,027	5,571.60	12,410,098.48	2,092,044.36
Pneumatic-tube routes	6	56.59		962,074.20
Wagon routes (in cities)	264	1,380.08	5,494,556.79	2,185,144.61
Railroad routes	3,479	234,175.13	502,937,359.43	57,148,381.32
Railway post-office cars				4,096,286.59
Electric and cable car routes	571	8,106.90	12,869,216.51	602,423.63
Total	12,628	286,315.65		$68,284,766.75
Star routes in Alaska (emergency)				46,015.00
Steamboat routes (pound rate)				78,936.69
Screen wagons, miscellaneous:				
Ferriage				61,209.61
Experimental collection and delivery service				661,736.67
Routes contracted, on equipment basis				24,522.42
Railroad transportation miscellaneous:				
Periodical mails				713,367.55
Mail weighing, etc				133,698.78
Freight on mail bags, postal cards, etc.				592,489.18
Railway mail service (officers, clerks, etc.)				28,804,947.28
Miscellaneous expenses				310.35
Total inland service				$99,402,000.28
Foreign mails:				
Aggregate cost			$3,287,000.73	
Less postal receipts at Shanghai			22,179.23	3,264,821.50
Total				$102,666,821.78

Railway Mail Pay.—Payments to railroads in 1916 aggregated $61,692,461, as compared with the following in previous years: 1910, $49,405,311; 1911, $50,583,123; 1912, $51,691,301; 1913, $51,959,388; 1914, $56,155,496; and 1915, $59,576,288.

The YEAR BOOK for 1916 (p. 535) analyzed the provisions of the bill to regulate mail pay which became a law during that year, authorizing the substitution by the Interstate Commerce Commission of a space basis for the compensation of railroads carrying mail instead of the existing weight basis. The consent of the Interstate Commission has been given to the placing of more than 90 per cent. of the mail transportation on a space basis. After a conference with the mail-traffic managers representing the railroads, a plan was worked out for installing the space basis on

Nov. 1, 1916, on the routes authorized. This plan was founded on the principle that the Post Office Department will pay only for such service as is actually rendered and will not ask the railroads to perform service without compensation, the adequacy of which is to be determined by the Federal Interstate Commerce Commission.

The Parcel Post.—The Parcel Post showed a development in 1916 consistent with preceding years. The number of parcels handled was three times the number handled at the commencement of the service and the weight handled has increased sevenfold. It appears, however, that over 70 per cent. of the parcels mailed emanate from the 50 largest cities of the country while only 17 per cent. are received at these cities. Smaller post offices receive far more parcels than are dispatched. Since the compensation of postmasters at smaller offices is based upon outgoing mail this places them at a disadvantage.

Increases in Postal Rates.—The War Revenue Act of Oct. 3 (see also I, *The Sixty-fifth Congress;* and XIII, *Public Finance*) made the following changes in postal rates effective Nov. 1, 1917:

(1) One cent additional to present two cents per ounce on all first-class mail.
   Drop letters of the first class two cents per ounce as before.
(2) Postcards one cent in addition to the present one cent.
(3) Postal rates on second-class publications:
   (a) Postage on matter other than advertisements 1¼ cents per pound during first year, beginning July 1, 1918, and 1½ cents during second year.
   (b) Postage on advertisements when advertisements exceed five per cent of the paper, during the first year, 1¼ to 3¼ cents per pound, varying with the zone; during the second year, 1½ to 5½ cents; during the third year, 1¾ to 7¾ cents; after July 1, 1921, two cents to 10 cents. The rate on publications for local delivery remains unchanged. Special arrangements are made for religious and educational publications not run for profit and where the total weight of any one issue to any one zone does not exceed one pound.

TELEGRAPHS AND TELEPHONES

Telegraphs.—The YEAR BOOK for 1914 (p. 532) contained a comparison of the telegraph industry in 1907 and 1912 as reported by the U. S. Census Bureau. Complete data for later years are not available, but the principal business operations of the Western Union Telegraph Co., which largely controls the telegraph business in the United States, are shown in the following table for the fiscal years ending Dec. 31, 1915, and Dec. 31, 1916:

	1915	1916
Stock (outstanding)...	$99,786,727	$99,786,727
Funded debt.........	31,994,000	31,994,000
Miles of wire.........	1,615,024	1,631,657
Offices...............	25,142	25,234
Total income........	52,475,721	63,621,601
Expenses............	40,972,541	48,727,921
Net revenue.........	11,503,180	14,893,680
Interest, etc.........	1,335,588	1,331,850
Employees' bonus....	....	1,166,424
Net profits...........	10,167,592	12,395,406
Cash, dividends......	4,986,364	5,984,567
Appropriated for reserve	....	1,000,000
Surplus for year......	5,181,228	5,410,839

The corresponding operations of the principal competitor of the Western Union Telegraph Co., the Mackay Companies, a voluntary association of many allied telegraph companies, which controls the Commercial Telegraph Cable Co., and through it the system known as the Postal Telegraph, were as follows during the fiscal years ending Feb. 1, 1916, and Feb. 1, 1917:

	1916	1917
Common stock.......	$41,380,400	$41,380,400
Preferred............	50,000,000	50,000,000
Income from investments in other companies............	4,274,941	4,683,265
Operating expenses...	55,741	56,799
Balance............	4,219,200	4,626,466
Dividends...........	4,069,020	4,069,020
Surplus for year......	150,180	557,446

Telephones.—The YEAR BOOK for 1914 (p. 529) showed a comparison of the telephone industry in 1907 and 1912 as reported by the U. S. Census Bureau. As in the case of the telegraph industry, complete data for later years are not available, but the operating returns of the American Telephone and Telegraph Co. in 1915 and 1916 were as shown in the following table, and are significant if not inclusive:

	1915	1916
Capital stock	$380,477,100	$395,635,619
Funded debt	120,182,700	185,002,100
Stations[1]	9,151,221	9,847,192[1]
Miles of wire[1]	18,505,545	19,850,315
Total earnings[1]	46,809,354	50,932,051
Net earnings[1]	41,117,487	44,743,376
Net income[1]	34,618,638	38,013,277
Dividends[1]	29,100,591	31,122,187
Surplus for year[1]	5,518,047	6,891,090

[1] Figures for the American Telephone and Telegraph Co. proper.

The total number of employees increased from 25,183,799 in 1915 to 28,530,073 in 1916.

The combined operations of the entire Bell System (except the Western Union Telegraph Co.), excluding all duplications, are shown in the following table for the years ending Dec. 31, 1915, and Dec. 31, 1916:

	1915	1916
Gross earnings	$239,909,649	$270,400,892
Operating expenses and taxes	97,667,918	109,876,748
Maintenance and depreciation	76,059,974	84,906,505
Net earnings	66,181,757	75,617,639
Interest	18,095,643	18,378,931
Net income	48,086,114	57,238,708
Dividends	32,897,065	35,160,119
Surplus for year	15,189,049	22,078,589

STREET AND ELECTRIC RAILWAYS

The unofficial returns of the *Electric Railway Journal* indicate that approximately 744 miles were added to the country's electric-railway mileage during the calendar year 1916, as compared with an addition of 1,044 miles in 1915. Of the total added in 1916, but 356 miles represent new electric-railway track built, while 388 miles represent electrified steam-railroad mileage.

The total electric-railway mileage of the United States in June, 1916, according to the unofficial returns of the *Journal* (issue of Jan. 6, 1917), was approximately 47,562 miles, as compared with 46,454 in 1915, and the operating companies operated 100,476 cars and electric locomotives, as compared with 99,405 in the preceding year. The number of companies, miles of track and equipment were geographically distributed as follows:

Districts	Number of Companies	Miles of Track	Cars	Electric Locomotives
New England states	97	6,190	14,254	107
Eastern states	329	13,967	38,337	164
Central states	314	15,966	28,242	110
Southern states	107	2,491	4,763	7
Western states	198	8,948	14,341	151
Total	1,045	47,562	99,937	539

The published returns of the American Electric Railway Association indicate that many electric-railway companies are experiencing financial difficulty even though their gross revenues are increasing. For the country as a whole the operating expenses of the companies included in these returns during the first six months of the calendar year 1917 increased 3.14 per cent., while their operating revenues increased 7.67 per cent. and their net earnings declined 4.7 per cent., as compared with the returns of 1916. As in the case of steam railroads the declining net earnings are found mainly in the region located east of the Mississippi and north of the Ohio Rivers. Net earnings in the eastern district declined 9.98 per cent., while in the South and West they increased 3.32 per cent. and 4.47 per cent., respectively. Seeking relief from these discouraging conditions many street-railway companies throughout the East have petitioned for a six-cent, and in some cases a seven-cent fare. In many cases the raise in fare has been granted.

RAILROADS

Physical Condition and Services.—The single-track mileage of all the railroads making returns to the Interstate Commerce Commission on June 30, 1916, was 259,211 miles. On the lines included in these returns there were 63,862 locomotives and 2,478,159 cars. Of the total cars in service, 2,326,987 were in the freight service, 54,664 in the passenger service, and 96,508 in company service. The average number of employees employed on a reporting mileage of 258,670 miles was 1,654,075. All of the returns stated above are exclusive of switching and terminal companies, and the equipment returns do not include the privately owned cars of commercial concerns or private car lines.

During the fiscal year 1916 the railways making reports to the Interstate Commerce Commission carried 1,005,683,174 passengers, an increase of 29,379,572 over the corresponding returns for 1915; and the total freight carried, including freight received from connections, was 2,225,943,388 tons, an increase of 423,925,211 tons as compared with the traffic carried in the preceding year. The aggregate ton-mileage was 343,099,937,805 tons, or more than the ton mileage of 1915 by 66,269,635,082 ton-miles. The traffic of the railroads in the fiscal year 1916 was the largest in their entire history. The complete figures for the year ending June 30, 1917, are not as yet available, but incomplete data indicate that the high traffic level of 1916 was well maintained and was probably exceeded.

Operating Revenues.—The operating revenues of the railroads reporting for the fiscal year 1916 reached the unprecedented level of $3,472,641,941, as compared with $2,956,193,202 in 1915 and $3,047,019,908 in 1914. Preliminary returns show that in the fiscal year 1917 operating revenues advanced to $3,824,420,000. Those lines having annual revenues exceeding $1,000,000 rose from $7,364 per mile during the first six months of the calendar year 1916 to $8,215 per mile in the six months ending June 30, 1917, an advance of 11.6 per cent. (See also XII, *Economic Conditions.*)

Operating Expenses.—The operating expenses of the railroads in the fiscal year 1916 were $2,277,202,278, as compared with $2,088,682,956 for the preceding year. Unofficial figures covering the lines having annual revenues above $1,000,000 show a further advance from $4,977 per mile during the first six months of the calendar year 1916 to $5,861 per mile during the six months ending June 30, 1917, or 17.7 per cent. This increase was distributed as follows: maintenance of way and structures, 6.8 per cent.; maintenance of equipment, 11.8 per cent.; traffic, 4.2 per cent.; transportation, 25.5 per cent.; general, 14 per cent.; and all other expenses advanced 29.4 per cent. Preliminary returns of the Interstate Commerce Commission show aggregate operating expenses of $2,581,839,000 for the fiscal year 1917. (See also XII, *Economic Conditions.*)

Net Income.—The net operating revenues as officially reported by the Interstate Commerce Commission increased from $846,706,749 in 1914 to $867,510,246 in 1915, $1,195,439,663 in 1916 and $1,242,581,000 in the fiscal year 1917. The operating income of the operating roads, consisting of their net revenues from railway operations, minus tax accruals and uncollectible railway revenues, also increased from $716,220,856 in 1915 to $1,044,602,590 in 1916 and $1,069,751,000 in the fiscal year 1917. Their operating ratio declined from 70.3 per cent. in 1915 to 65.6 per cent. in 1916, but increased to 67.5 per cent. in 1917.

The "net income" of the operating roads, the net returns remaining after all income has been included and all expenses deducted, was officially reported to be $604,013,895 in 1916, as compared with $308,378,567 in 1915. Complete income returns for 1917 are not at present available, but it has been established that although gross revenues continued to increase, net revenues have declined for the United States as a whole since December, 1916. The net operating revenue per mile of all the lines having operating revenues exceeding $1,000,000 annually decreased 1.4 per cent. during the first six months of the calendar year 1917, as compared with those of the same months in 1916; and their operating income per mile decreased 4.2 per cent. These average declines, however, are traceable wholly to the eastern district. The net operating revenues and operating income of the lines in the West and South continued to show increases until later in the year 1917. (See also XII, *Economic Conditions.*)

The Interstate Commerce Commission in the Fifteen Per Cent. Rate Case (see *infra*) analyzed the revenues and expenses of the railroads as follows:

> If on the basis of the first four months of the current calendar year we estimate the total gross revenue in the eastern district for the entire year, we find indicated an average operating revenue per mile of road of $29,432, as against an average operating revenue for the preceding year of $27,688. Despite this increase in the gross operating revenue, the average operating income per mile of road estimated for 1917, on the basis of the first four months in the calendar year, amounts to but $5,802, as against $7,782 for 1916. This indicates that the ratio of operating income to average investment in the eastern district will be but 4.893 per cent., as against 6.662 per cent. for 1916.
>
> In other words, using the actual figures for the first four months of the present calendar year, it would appear that although the gross revenue for the carriers in the eastern district would exceed that for the calendar year 1916 by approximately 7 per cent., the operating income per mile of road will be but $5,802 as against $7,782 in 1916. This is only 75 per cent. as much net income per mile of road in 1917 for performing about 107 per cent. of the service performed in 1916.
>
> The returns for the first four months of the calendar year 1917 for the roads in the southern district and in the western district disclose a different tendency and outlook. Common alike to the three districts is the probable increase in gross operating revenues. Thus, the first four months disclose average operating revenues per mile of $4,388 in the southern district as against $3,960 for the corresponding period in 1916, and $3,705 as against $3,288 in the western district. But in both the southern and western districts the first four months of the current calendar year presage not only an increase in the average operating income per mile of road, $1,222 as against $1,181 for the first four months of 1916 in the southern district and $930 as against $877 for the roads in the western district, but in both an increase in the ratio of operating income to average investment is indicated, rising in the case of the southern district from 6.390 per cent. to 6.453 per cent. and in the western district from 5.953 per cent. to 6.217 per cent.
>
> It may very pertinently be asked how it results that with the carriers in all three districts confronting increased expenditure for labor, fuel, and supplies, the prospective effect upon their respective net income is so markedly different. To this inquiry it is probably too early to make a completely satisfactory answer. Among the factors the following may be suggested as highly probable contributory causes. The ratio of increased wages may have been greater for the eastern carriers. The eastern carriers have encountered earlier and to a more complete degree the increase in prices of materials and supplies. The volume of traffic which has congested certain of the roads and terminals in the eastern district would seem to indicate with their present facilities they can perhaps take on additional traffic only at an increasing cost per unit. In this respect they present a somewhat sharp contrast to roads in the southern and western districts. Congestion at eastern ports and terminals has led to the diversion of some traffic to Gulf and south Atlantic ports. . . . In the western district the transcontinental roads, particularly the Southern Pacific and the Santa Fe, are now carrying a large volume of traffic which would normally move *via* the Panama Canal. This they are apparently able to handle without difficulty.

Capitalization.—The increase in railroad capitalization noted in previous years was checked somewhat during the fiscal year 1916, the total outstanding railroad securities reported to the Interstate Commerce Commission decreasing from $21,127,959,078 par value in 1915 to $21,092,372,245 in 1916. The assignments of capitalization as reported by the Interstate Commerce Commission for the past three years are shown on the following page.

The reported investment in road and equipment of roads having annual operating revenues exceeding $100,000 increased from $17,267,119,423 on June 30, 1915, to $17,525,576,908 on June 30, 1916.

Dividends.—The railroads reporting to the Commission declared dividends in the fiscal year 1916 aggregating $411,975,955, as compared with $328,404,532 in 1915 and $451,653,346 in 1914. The dividends declared in 1916 were equivalent to 7.98 per cent. on dividend-paying stock. Of the total capital stock outstanding, however,

RAILROAD CAPITALIZATION

Classes of Securities	1914	1915	1916
Common stock	$7,304,479,846	$7,599,937,801	$7,603,223,972
Preferred stock	1,376,279,858	1,389,001,758	1,439,813,799
Mortgage bonds	8,496,370,538	9,047,182,748	9,254,546,150
Collateral trust bonds	1,182,683,530	1,229,922,755	1,062,130,046
Plain bonds, debentures and notes	1,142,016,070	1,210,565,212	1,074,513,289
Miscellaneous funded obligations	72,700,640		
Income bonds	254,230,505	247,359,856	283,277,570
Equipment trust obligations	418,540,270	403,988,948	374,867,419
Total	$20,247,301,257	$21,127,959,078	$21,092,372,245

40.96 per cent. paid no dividends whatever.

Freight Rates.—Rate changes were a subject of unusual interest during the year. During March and April the rail carriers in each of the three great classification territories represented to the Interstate Commerce Commission that war conditions had occasioned an emergency that made necessary a prompt increase in the general level of their freight charges. The result was the "Fifteen Per Cent. Rate Case" which was decided on June 27 (45 I. C. C. Reports, 303). The carriers' plea for a general advance in freight rates was refused, but certain advances, particularly in eastern or official territory, were authorized

(1) Eastern carriers were authorized by the Interstate Commerce Commission to increase their commodity rates on coal, coke and iron ore; in fact these increases had been authorized shortly before the Fifteen Per Cent. Case was decided.

(2) It was felt, however, that the conditions confronting the eastern lines were different from those faced by the railroads of the West and South, and an increase in their class rates was therefore authorized. The Commission's decision in this regard was as follows:

> It is not possible to estimate with confidence and accuracy the amount of additional revenue that will accrue from increased class rates, but from the best information at hand we conclude that the eastern carriers should be permitted to increase their class rates between New York and Chicago to the following scale and to correspondingly increase their other class rates applying intra-territorially between points in official territory observing the established relationships between ports and localities:

1	2	3	4	5	6
90	79	60	42	36	30

(3) Rate advances on bituminous coal and iron ore similar to those authorized in eastern territory were authorized in the South, and on coal and coke in western territory. In the Commission's judgment, however, no revenue emergency had been created in these regions and a general advance in class rates was not authorized.

(4) Being convinced that unusual burdens were laid upon rail-and-water routes by "largely increased costs of operation, the diversion of traffic to other channels because of war conditions, and the attendant increased marine insurance," the Commission authorized the rail and water carriers in each of the three traffic districts to advance their rail-water rates to a level not higher than the all-rail rates between the same points. Later in the year, when net earnings became more unfavorable, the railroads appealed to the Commission for a reconsideration of its decision.

Many important decisions involving both the reasonableness of rates and rate discriminations and relationships were announced by the Commission during the year. Not only were the rates on bituminous coal in eastern territory advanced, but the rate relationship or rate structure on bituminous coal shipments from Ohio, Pennsylvania, Maryland, West Virginia, Virginia, Kentucky and Tennessee coal districts to numerous points in Central Freight Association Territory were revised (46 I. C. C. Repts. 66, July 13, 1917). The Commission also decided that the rates on bituminous coal shipped from eastern coal districts to Lake Erie ports as lake cargoes were unduly preferential and prejudicial. It prescribed revised relationships as between the different coal-shipping districts and required the carriers to specify separately their charges for line haul and dock services. The rate relationships in the case of coal shipped from Wyoming and Montana to South Dakota as compared with the rates on shipments to Nebraska were also revised by order of the Commission (46 I. C. C. Repts. 628, July 3, 1917).

The revised Central Freight Association class-rate scales which had been temporarily suspended on Dec. 1, 1916 (*A. Y. B.*, 1916, p. 540), were permanently suspended on June 29, 1917. Instead the Commission proposed a modification, the modified system comprising three class scales, two of which were prescribed by the Commission. Zone A scale applies within Central Freight Association territory south of the Michigan Central. Zone B scale, which authorizes higher rates, applies to and from central Michigan points located immediately north of Zone A; and Zone C scale, which is to be based upon Zone B rates by the addition of differentials, applies to and from Michigan points located farther north (45 I. C. C. Repts. 254, June 29, 1917; 46 *ibid.*, 475, July 21, 1917).

In April the Interstate Commerce Commission upheld a portion of the existing rate structure applicable to shipments between Wisconsin points and points in Official Classification Territory located east of the Illinois-Indiana state line, but pronounced the rates to and from certain cities in southern Wisconsin to be unreasonable and unduly prejudicial. For these southern cities it prescribed maximum class rates for the future based upon percentages of the rates applicable between Chicago and New York (44 I. C. C. Repts. 602, April 25, 1917). Before these cases were submitted, moreover, the railroads cancelled their joint class rates to Wisconsin points in so far as they exceeded the lowest combinations and agreed to various additional readjustments.

The Iowa interstate freight-rate structure was also revised in various respects. On July 3, the Interstate Commerce Commission ruled that ocean-and-rail and rail-lake-and-rail class rates from the so-called Mississippi cities to trunk-line points were unduly discriminatory in comparison with the rates from the lower Mississippi River cities. These rates were blanketed *via* the various river gateways as had previously been done in the case of all-rail rates (46 I. C. C. Repts. 63, July 3, 1917). Three days later the Commission readjusted the rail class-rate structure on shipments from Central Freight Association points west of Pittsburgh and Buffalo and east of the Indiana-Illinois state line to upper Mississippi River points located in Iowa, the St. Louis rates being adopted as a rate basis. Where distances do not exceed the distance to St. Louis, the rates may not exceed those to the latter city. When distances are greater, the St. Louis class rates may be exceeded by prescribed differentials. The rail class rates from Buffalo and Pittsburgh points to west bank of the Mississippi River points extending from Dubuque to St. Louis were at the same time limited to 64½ per cent. of the rates maintained between St. Louis and New York City (46 I. C. C. Repts. 20, July 6, 1917). The following day it was decided that the Mississippi-Missouri River proportional class scale which had previously been prescribed to river points should be prorated to interior Iowa points in accordance with a distance scale prescribed by the Commission (46 I. C. C. Repts. 39, July 7, 1917). On July 20, it was held that the rates from points east of the Illinois-Indiana state line on asphalt, iron and steel, paper and similar commodities to various interior Iowa points should be revised in accordance with the principles announced in the preceding decision (46 I. C. C. Repts. 594, July 20, 1917).

The rail-and-lake rates from all trunk-line and Central Freight Association points to Duluth were not held to be unreasonable but various changes were ordered. Those from certain trunk-line points which exceeded the rates to Chicago were found to be unduly prejudicial to Duluth; commodity lake-and-rail rates to Duluth in excess of what they would be if the existing class-rate differentials as between Duluth and the Twin Cities were applied were similarly held to be unfair to Duluth; and the long-and-short-haul clause was applied in some instances although it was denied in others (46 I. C. C. Repts. 585, June 21, 1917). On July 18, the Commission ruled that whenever ex-rail re-shipping rates on grain are applied from Chicago to the Atlantic seaboard and interior eastern points reasonable ex-rail re-shipping rates should also be applied from Buffalo; and similarly that existing discrimination against Buffalo in the matter of transit services and charges should be discontinued (46 I. C. C. Repts. 570, July 18, 1917). Early in the year the Commission ruled that the cancellation of joint rail-lake-and-rail rates from eastern points to points south and west of the lakes, as had been proposed after the railroads were required to dispose of their lake lines, was not justified (42 I. C. C. Repts. 513, Jan. 2, 1917).

Milk and cream rate investigations similar to the New England investigation of the preceding year (*A. Y. B.*, 1916, p. 546) were made at other points in 1917. The rates on milk, cream and various analogous products to New York City, Hoboken, Jersey City and Weehawken were found to be unduly prejudicial to nearby shipping points and reasonable maximum rates were prescribed by the Commission (45 I. C. C. Repts. 412, June 21, 1917). Similar rulings were made with reference to Cincinnati, Boston, Philadelphia, Atlantic City and Cape May (46 I. C. C. Repts. 601, July 19, 1917; 45 *ibid.* 393, June 21, 1917; 45 *ibid.* 371, June 21, 1917).

The transcontinental rate structure was again subjected to far-reaching changes as the result of the Commission's decision of June 30, 1917. The transcontinental railroads were ordered to adjust their rates to Pacific terminals and intermediate points so as to come within the long-and-short-haul clause. Certain existing westbound terminal rates were found not unreasonably low and not to have been induced by water competition; others were held to be unreasonably low on shipments from points east of the Missouri River. Eastbound rates on barley, beans, canned goods, asphaltum, dried fruits and wine to the Atlantic seaboard *via* rail-water routes through Galveston were also to be brought within the long-and-short-haul clause. The Commission regarded some of the adjustments as paramount, but others are based upon the temporary absence of active water competition *via* the Panama Canal. When vessels again enter the coast-to-coast business after the European War and ocean rates gradually return to a normal level, further readjustments of transcontinental rates may again become necessary (46 I. C. C. Repts. 236, June 30, 1917).

In October, before the revised rates could become effective the Commission suspended them indefinitely because the act of Aug. 9, 1917, amending the Interstate Commerce Act (see *Federal Legislation, infra*) made it illegal to file any increased rate tariff except after specific approval has been obtained from the Commission (see *Rulings of the Interstate Commerce Commission, infra*).

Freight and Passenger Receipts.—The average receipts per ton per mile as reported by the Interstate Commerce Commission were 0.716 cent in the fiscal year 1916, as compared with 0.732 cent in the preceding year; and the average receipts per passenger per mile were 2.006 cents and 1.985 cents, respectively, in 1916 and 1915. The average receipts per ton per mile and per passenger per mile for the railway system as a whole during the years 1900 to 1916 were as follows:

YEAR	Receipts per Ton per Mile, cents	Receipts per Passenger per Mile, cents
1900	.729	2.003
1905	.766	1.962
1906	.748	2.003
1907	.759	2.014
1908	.754	1.937
1909	.763	1.928
1910	.753	1.938
1911	.757	1.974
1912	.744	1.985
1913	.729	2.008
1914	.733	1.982
1915	.732	1.985
1916	.716	2.006

Railroad War Organization.—In order to coöperate more closely with each other and with the Government, the railroads throughout the country have adopted a war operating organization. The head of this organization is a Special Committee on National Defense with a membership of 28. This in turn appointed a smaller executive committee known as the Railroads' War Board which was in active charge of the war organization until Dec. 29 when it disbanded. From this point on, the organization is sub-divided in part geographically and in part according to special functions. The larger committee of 28 is divided into district committees, one committee being organized in each of the six U. S. Army departments. Seven general agents at military headquarters were appointed, one for each Army department and the seventh stationed at Washington. A large number of general agents stationed at mobilization points throughout the country were also appointed so as to bring about local coöperation at military camps. In each case there is an agent in charge of operating and another in charge of accounting. The functional subdivision of the war organization includes Commission on Car Service, with 27 subcommittees (see *Rulings of the Interstate Commerce Commission, infra*), and committees on military equipment standards, military transportation accounting, military passenger tariffs, military freight tariffs, express, and materials and supplies. A central operating or equipment pooling committee was also established at Pittsburg. (See also *Director-General of Railroads, infra.*)

RULINGS OF THE INTERSTATE COMMERCE COMMISSION

Most of the principal decisions of the Interstate Commerce Commission during the year were concerned with freight rates, and have therefore been mentioned above. Certain other decisions and rulings of general importance, however, may be noted:

(1) Fifteenth Section Order No. 1. —In interpretation of the amendment of Section 15 of the Interstate Commerce Act, enacted on Aug. 9, 1917 (see *Federal Legislation, infra*) the Commission ruled on Oct. 20, as follows:

> This means that the approval of a proposed increased rate, fare, charge, or classification must be secured before the tariff containing it is filed with the Commission by the carrier.
>
> Requests for such approval must be made by applications to the Commission to the effect and in the form hereinafter set forth.
>
> Such applications must show the rates, fares, charges, and classifications which it is proposed to increase, including rules or regulations affecting charges, as well as the nature and extent of the increase, the way in which it is to be effected, and the proposed rates, fares, charges, classifications, rules and regulations of which approval is sought, and must also contain a complete and accurate statement of the reasons advanced by carriers in justification of the increases sought to be established. If the application embraces a number of increases, they may be shown in an exhibit attached to and specifically designated in the application. This may be done by using a copy of the effective tariff and showing thereon in red ink the proposed increases, or by using a proof copy of the proposed issue and inserting thereon in red ink the existing rate, fare, etc., or by showing both the existing and proposed rates, fares, etc., in a memorandum, either typewritten or manuscript, attached to the application as an exhibit. If it is proposed to increase a large number of rates, fares, etc., by a uniform specific amounts or percentage, the application, instead of showing each specific change, may show the present and proposed rates, fares, etc., between typical points and state the amount or per cent. of the proposed uniform increase.

(2) Car-Supply Investigation (42 I. C. C. Repts. 657, June 18, 1917). —The Commission ruled that the railroads' car-service rules relating to open-top coal and coke cars and to railroad-owned or controlled refrigerator, heater, ventilated and insulated cars are unreasonable to the extent that they differ from the code of rules prescribed by the Commission. Action concerning the car-service rules applicable to other equipment was deferred; instead the Commission favored the immediate appointment of a railroad committee with plenary power to coöperate with the Commission in securing a more equitable distribution of cars. A so-called Committee on Car Efficiency had previously been appointed to act in coöperation with the Commission, and on Dec. 5, 1916, had been succeeded by a reconstructed Commission

on Car Service. On Feb. 2, after this decision was announced, this Commission was again reorganized and it was given the plenary powers desired. On April 11, it was made a sub-committee of the Special Committee on National Defense (see *supra*). It has become an important factor in railroad car service for it has amended and suspended rules, relocated cars, granted priority where deemed desirable, and has acted as the manager of a nation-wide freight-car pool. Local committees were organized at 27 commercial centers to expedite local control.

(3) Car-Peddling Case (45 I. C. C. Repts. 494, June 21, 1917).—The Commission upheld the view that the use by a shipper of a car on the carrier's tracks at destination as a place for peddling or vending to the public the carload shipment arriving in it is not a service of transportation that is sanctioned by common law or the Interstate Commerce Act, and that "the mere toleration by certain carriers through a period of years of such a use of their property affords no basis for a ruling that the practice has grown into a shipper's right and a carrier's duty." Discriminations in connection with peddler services were condemned, and a distinction is drawn between car peddling and consolidated shipments to granges and other farmer's organizations.

(4) Southern Pacific Company's Ownership of Atlantic Steamship Lines (45 I. C. C. Repts. 505, May 12, 1917).—The Southern Pacific Co. having corrected the objectionable practices previously pointed out by the Commission, it was permitted to continue the operation of its Atlantic steamship lines between New York, New Orleans and Galveston under the provisions of the Panama Canal Act.

LEADING COURT DECISIONS

The following important court decisions affecting railroads were rendered since the last issue of the YEAR BOOK:

(1) The Eight-Hour Day Law Decision (U. S. Supreme Court, March 19, 1917).—The constitutionality of the Federal Eight-Hour Day act, approved September 3 and 5, 1916 (*A. Y. B.*, 1916, p. 548) was upheld by the U. S. Supreme Court by a majority vote. The Court ruled that Congress was within its powers even though the statute be viewed as one fixing wages. At the same time, however, the Court also ruled that the power to enact a compulsory arbitration statute is a power that is "undoubtedly possessed" by Congress.

(2) Interstate *vs.* Intrastate Rate Cases.—The conflict of authority as between Federal and state regulation which became important in 1916 (*A. Y. B.*, 1916, p. 543) has since then been waged mainly in the courts. On June 11, 1917, the U. S. Supreme Court rendered a decision concerning the South Dakota express-rate dispute. The Court upheld the superior power of the Interstate Commerce Commission when differences between intrastate and interstate rates result in unreasonable discrimination. At the same time, however, it ruled that the express companies had gone further in revising their rates in South Dakota than had been authorized by the Interstate Commerce Commission. The Commission's order specifically included the express rates between Sioux City, Iowa, and but five named South Dakota cities. The express companies cannot therefore revise all the intrastate express rates to and from these five cities in South Dakota in disregard of the wishes of the state commission; it can so revise only such intrastate rates to and from these five cities as give undue preference to them over Sioux City. The Supreme Court limited the application of the Commission's order to competitive territories. The decision is regarded as placing a restriction on the general inferences that had been drawn from the Court's Shreveport and Minnesota rate decisions.

In Arkansas the state Supreme Court on July 9, decided the issue in that state so far as the state judiciary is concerned by establishing the rule that when the Interstate Commerce Commission states what a reasonable rate would be for transportation under like circumstances and conditions, such rate becomes the rule which a carrier may apply in the exercise of the option permitted in an order requiring the removal of undue discrimination.

A decision having an indirect bearing upon the Arkansas rate situation was rendered by the U. S. Supreme Court on May 21. The Court upheld the contention that the two-cent passenger fare established by law in 1907 and certain freight rates ordered by the Arkansas Railroad Commission were confiscatory. The Court referred to a decision of the Interstate Commerce Commission (39 I. C. C. Repts. 256, 265) in which the Commission stated that "the present unduly low rates within Arkansas are due at least in part to the attempt of the Railroad Commission of Arkansas to protect Arkansas shippers and build up Arkansas jobbing centers."

The dispute centering about the Illinois two-cent passenger fare act has been appealed to the U. S. Supreme Court. Arguments were made before the Court during October.

(3) Private-Car Demurrage Decision (Swift and Co. *vs.* Hocking Valley R. R. Co., U. S. Supreme Court, March 6, 1917).—The effort of the packing company to overthrow the private-car demurrage rule established by the Interstate Commerce Commission in the Procter & Gamble demurrage case was not sustained. The Commission's ruling was upheld.

(4) Land Grant Decision (Oregon & California Railway Co. *et al.*, *vs.* U. S., U. S. Supreme Court, April 23, 1917).—It was held that the extensive public land grants that had been made to carriers in Oregon and Washington (*A. Y. B.*, 1916, p. 272) must be returned to the United States upon payment by the Government of $2.50 per acre. The ruling was adverse to the carriers because the carriers had not disposed of their lands to actual settlers in accordance with the manner contemplated in the original grants. The constitutionality of the Ferris Act providing for the condemnation of land grants was upheld.

(5) Tank-Car Case (U. S. and I. C. C. *vs.* Pennyslvania R. R. Co., U. S. Supreme Court, Dec. 11, 1916).—The Supreme Court affirmed the decree of the U. S. District Court for the Western District of Pennsylvania which had denied the power of the Interstate Commerce Commission to require carriers, upon reasonable request, to provide all the tank cars necessary for handling the normal oil traffic. The Court regarded tank cars as "vehicles of a special type having no reference to the safety of transportation," and consequently not within the general requirements concerning equipment contained in the Interstate Commerce Act.

(6) Indiana Headlight Law (Vandalia R. R. Co. *vs.* Public Service Commission of Indiana, U. S. Supreme Court, Dec. 11, 1916).—The constitutionality of the Indiana locomotive-headlight law as amended in 1909 and applied by the state Commission in 1910 was affirmed in a case that had been appealed from the Supreme Court of Indiana.

(7) Lehigh Valley Lake Line Decision (U. S. Supreme Court, March 26, 1917).—The Lehigh Valley Railroad, having been ordered by the Interstate Commerce Commission to dispose of its lake line under the provisions of the Panama Canal Act, (*A. Y. B.*, 1916, p. 547), appealed to the U. S. Supreme Court for a reversal. The Court, however, upheld the statute and the Interstate Commerce Commission's order.

(8) Mississippi Railroad Commission *vs.* Mobile & Ohio R. R. (U. S. Supreme Court, June 4, 1917).—When in 1914 the Mobile and Ohio Railroad took off a number of passenger trains because excessive cost the state Railroad Commission endeavored to force their return. The U. S. Supreme Court, however, ruled that railroads may take off passenger trains as measures of necessary economy forced upon them by war conditions.

(9) American Express Co. *vs.* United States Horse Shoe Co. (U. S. Supreme Court, May 21, 1917).—In this decision the U. S. Supreme Court upheld the release-valuation clause contained in express receipts and reversed the judgment of the Supreme Court of Pennsylvana.

(10) Norfolk Southern R. R. Co. *vs.* W. C. Chatman (U. S. Supreme Court, May 21, 1917).—It was held that a railroad is liable for injury to a livestock caretaker even though the latter has signed the usual "re-

lease for man or men in charge" contained in the customary Uniform Livestock Contract.

(11) Missouri Pacific Ry. Co. *vs.* McGrew Coal Co. (U. S. Supreme Court, May 21, 1917).—The decision of the Supreme Court of Missouri upholding the validity of the Missouri long-and-short-haul statute was affirmed by the U. S. Supreme Court.

FEDERAL RAILROAD LEGISLATION

Car Service Amendment.—The continued freight-car shortage and freight terminal congestion resulted in the amendment of Section 1 of the Interstate Commerce Act by an act of May 29, 1917, conferring stringent powers upon the Commission. Whenever the Commission believes that immediate action is needed it may, either upon complaint or its own initiative, and "with or without notice, hearing or the making or filing of a report," suspend any car-service rules then in effect and instead issue whatever directions concerning car service it may deem to be in the public interest. The Commission is also specifically instructed, after hearing, "to establish reasonable rules, regulations and practices with respect to car service."

The Priority Amendment.—Believing that the car-service powers conferred upon the Interstate Commerce Commission would not be sufficient entirely to overcome the difficulties encountered in the freight service, Congress further amended (act of Aug. 10, 1917) Section 1 of the Interstate Commerce Act by providing that during the continuance of the war in Europe the President may for purposes of national defense and security direct that certain kinds of traffic shall have preference or priority in transportation, whether by rail, water or otherwise. Such directions may be issued directly or through the Interstate Commerce Commission or any person or persons designated by the President. Accordingly, the President has since appointed Judge Robert S. Lovett as Priority Director. This act also penalizes all interferences during the war with the orderly conduct of movement in the United States of interstate or foreign commerce or the make-up or movement or dispatch of trains, locomotives or cars by physical force, intimidation or threats.

Commission Organization Amendment.—The Interstate Commerce Act was amended by act of Aug. 9, 1917, in several important respects. The Commission's membership was increased to nine. It may divide its members into as many "divisions" as it deems necessary, and each division may perform any work assigned to it by the Commission. "In respect thereof the division shall have all the jurisdiction and powers now or then conferred by law upon the Commission, and be subject to the same duties and obligations." In proceedings relating to the reasonableness of rates or discriminations, however, at least three members must participate, and valuation proceedings require the participation of at least five members. In October, the Commission announced the creation of three divisions.

The work of the Commission was further expedited as follows:

> The Commission may conduct its proceedings in such manner as will best conduce to the proper dispatch of business and to the ends of justice. The Commission shall have an official seal, which shall be judicially noticed. Any member of the Commission may administer oaths and affirmations and sign subpœnas. A majority of the Commission shall constitute a quorum for the transaction of business, except as may be otherwise herein provided, but no commissioner shall participate in any hearing or proceeding in which he has any pecuniary interest. The Commission may, from time to time, make or amend such general rules or orders as may be requisite for the order and regulation of proceedings before it, or before any division of the Commission, including forms of notices and the service thereof, which shall conform, as nearly as may be, to those in use in the courts of the United States. Any party may appear before the Commission or any division thereof and be heard in person or by attorney. Every vote and official act of the Commission, or of any division thereof, shall be entered on record, and its proceedings shall be public upon the request of any party interested.

The method of bringing about rate increases was changed in Section 4 of this act by providing that until Jan. 1, 1920, "no increased rate, fare, charge, or classification shall be filed except after approval thereof has been secured from the Commission." The Commission may grant approval without formal hearing, but it is obliged to examine every proposed advance before the tariffs are filed (see also *Rulings of the Interstate Commerce Commission, supra*).

Joint Committee on Railroad Legislation.—The Congressional investigating committee authorized under a joint resolution of July 20, 1916 (*A. Y. B.*, 1916, p. 549) and continued by resolution of Jan. 15, 1917, was continued by the Urgent Deficiency Appropriation Act of Oct. 6, 1917, until December, 1918.

Public Utilities War Taxes.—Under the War Revenues Act of Oct. 3, 1917, a three per cent. tax is imposed upon railroad freight rates; one per cent. for each 20 cents on sums paid to express companies and for motor transportation operated in competition with rail or water carriers; eight per cent. on passenger tickets, exclusive of commutation or season tickets for trips of less than 30 miles and of fares under 35 cents; 10 per cent. on parlor car, stateroom and sleeping-car tickets; five per cent. on rates paid for oil pipe-line transportation; and five cents on telephone, telegraph or wireless messages where the toll exceeds 15 cents. These war taxes became effective on Nov. 1 (*see also* XIII, *Public Finance*).

Director-General of Railroads.—On December 27, 1917, the President, exercising powers granted to him by Congress on August 29, 1916, appointed Mr. W. G. McAdoo, Director-General of American railroads. The President also stated that upon the reassembling of Congress he would recommend (1) that the railroad properties be maintained during the period of Federal control in as good repair and as complete equipment as when taken over by the Government; (2) that regular dividends hitherto declared and maturing interest upon bonds, debentures and other obligations be paid in due course, and such regular dividends and interest may continue to be paid until and unless the director-general shall otherwise determine; and (3) that the roads shall receive a net operating income equal in each case to the average net income of the three years preceding June 30, 1917.

The railroads were placed under the control of the director-general on December 28, 1917. His first order to the railroad companies was as follows:

> Having assumed the duties imposed upon me by and in pursuance of the proclamation of the President, dated December 26, 1917, you will, until otherwise ordered, continue the operation of your road in conformity with said proclamation. You are requested to make every possible effort to increase efficiency and to move traffic by the most convenient and expeditious routes.
>
> I confidently count upon your hearty coöperation. It is only through united effort, unselfish service and effective work that this war can be won and America's future be secured.

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XX. ENGINEERING

CIVIL ENGINEERING

Frank C. Wight

General Conditions.—Civil engineering was surprisingly active in 1917 in spite of the retarding influence of the war. Two mutually counteracting conditions were apparent, both the result of the war. On the one hand, the high cost of labor and materials restricted activity, while on the other, the manifold enterprises directly or remotely connected with the war stimulated engineering construction beyond the normal of recent years. Unemployment of engineers was practically unknown, and contractors and supply houses were booked up to capacity.

Labor in all fields was very scarce and expensive, and construction labor was no exception. Government rush jobs demanding thousands of men at unprecedented wages were under way in almost every section of the country. Materials also were at the service of the Government; even when purchasable they could hardly be delivered on account of rail congestion. Finally, large issues of Federal bonds at attractive interest made bond flotation for municipal, state or county work expensive and difficult. All of these conditions tended inevitably to reduce the volume of normal engineering work. Many projects had to be postponed or abandoned, either because of the fears of the projectors or because such bids as were received were high beyond all possibility of consideration.

To counteract these conditions the war demands more than sufficed. The Government had to have in the shortest order a vast number of structures for its own use—camps, cantonments, warehouses, piers, a nitrate plant, and offices. All of this construction required the highest engineering skill and contracting organization, and into this work the engineering profession threw itself with characteristic vigor. A secondary stimulus was noticeable in factory construction to take care of increased orders directly traceable to the war.

Military Engineering.—The entry of the United States into the war put an immediate tax upon the resources of the engineering profession, not only in the enormous construction programme which was preliminary to the housing, training and transporting of the new army, but also in the organization of military engineering units. Fortunately a proper foresight had prepared the machinery for providing the nucleus of a body of commissioned engineer officers. In 1916 the Engineer Officers' Reserve Corps was established (*A. Y. B.*, 1916, p. 559), composed of civilian engineers of more than elementary military knowledge and experience and subject to call to the colors in time of emergency. Early in the summer this corps was called into service and increased by new recruits, and all members, after a brief term of duty at an officers' training camp were enrolled at special engineer training camps where they were given intensive instruction in military engineering. In this way a sufficient quota of engineer officers for the new army was secured by the late summer, so that in July the War Department announced that it could receive no more applications for engineer commissions. Various other corps, however, had need later for engineers to take charge of building operations outside the regular work of the Engineer Corps.

The officers commissioned as engineers are assigned to various duties. A large number are to be engaged in the engineering work of the advance line at the front. Their duties will be the purely military ones of reconnaissance, topography, trench construction, bridge construction and destruction, etc. Many more of the engineering units, however, will be assigned to purely civil engineering duties in the zone between the advance line and the port of landing in France. All of this district is in control of the American forces, and all the engineering construction, operation and maintenance in the district devolves upon the American Engineer Corps. Other engineers are assigned to duties in the United States, mainly in connection with the construction of barracks, which, although under the direction of the Quartermaster Corps or the Signal Corps, requires engineers, either attached to those corps or assigned to them from the Engineer Corps.

Cantonment Construction.—The construction of the cantonments to house the new National Army during its period of training was a stupendous task, carried out practically entirely by the engineering profession and the contractors. Early in June it was announced that 16 camps were to be built in various sections of the country, each to house about 40,000 men. Within three weeks the preliminary designs for the standard cantonment were made, the sites selected, the contracts for construction awarded, and some of the work begun. By Sept. 1 construction was 75 per cent. completed—in fact, two of the camps were then ready for full occupancy, and by Oct. 15, the little group of new cities was ready for the new armies.

It is difficult to visualize what one of these camps is, but a partial idea may be conveyed by the statement that the standard design, which had to be modified to fit local topography, was a street three miles long, lined on both sides with 1,200 two-story buildings each averaging 43 by 140 ft. in area, and backed by other rows of lavatories, stables, warehouses, offices, hospitals, etc. In addition, a complete water and sewer system had to be built, railroad connections brought to the camp, terminals provided, and lighting, heating and cooking facilities installed. Besides the 16 major cantonments, there were under construction simultaneously many other camps, for officers, for the Regular Army and for the National Guard, and also many warehouses and terminal storehouses, to say nothing of the buildings required by private interests whose war contracts demanded more space.

Railway and Highway Regiments.—Early in the summer, through a special intensive recruiting campaign, nine regiments of engineers were raised and sent to France for railway service. These units were organized under the provisions of the old Army Act and became part of the Regular Army. They consisted of railway men from all branches of the service, and they were immediately put on French railway work, which was suffering from lack of trained men. Later in the year other engineering regiments specializing in lumbering, highway construction and repair, etc., were organized and sent to France. All of these regiments had engineer officers of the old Regular Army in high command but otherwise they were officered throughout by volunteer engineers from civil life.

Waterways.—A radical change in the river-control policy of the United States was initiated in 1917 by the enactment of the so-called Humphreys Flood Control Act on March 1. Hitherto the Federal Government has carried on all of its river and harbor work under the clause in the Constitution permitting the regulation of interstate commerce, that is, all river control was supposed to be in the interest of navigation. In many cases this convention was farcical, particularly on the Mississippi, where navigation, that is, commercial navigation, has practically ceased, and where the money spent has been almost entirely a matter of flood prevention and shore protection. The Humphreys Act recognizes this distinction through the appropriation of $45,000,000 for the control of floods on the Mississippi River and $5,600,000 for similar work on the Sacramento River. Not more than $10,000,000 is to be spent on the Mississippi nor more than $1,000,000 on the Sacramento in any one year, and, what is very important, none of the money appropriated for the Mississippi can be used in the construction or repair of levees unless assurances have been given that the local interests protected will contribute a sum equal to at least one-half the amount allotted by the Government.

The Rivers and Harbors Appropriation Act signed by the President on Aug. 8 provided for the creation of a Waterways Commission which is to investigate and report on the uses of water for whatever purpose. This Commission is the basis of a project long fathered by the late Senator Newlands, which in its complete form is intended to control all the water uses in the country. As at present provided, however, the Commission has only investigatory powers, and is rather topheavy as to expenditures. As seven commissioners are to receive $7,500 each per year and only $100,000 is appropriated for the whole annual budget, the work the Commission does will have to be largely that of the commissioners themselves. (See also IX, *Waterways and Harbors.*)

One scarcely anticipated result of the war has been the impetus given to inland-waterway navigation. The unprecedented increase in foreign trade has taxed the railroads leading to the Atlantic Coast beyond their capacity, so that not only are the coast terminals incapable of handling their shipments, but there is also a marked freight-car shortage. In consequence inland waterways are again being looked to as freight carriers. The Federal Government has intervened in the crisis and through a special agent is endeavoring to promote the use of the existing waterways by active assistance to shippers and transportation companies and by a publicity campaign to popularize the water routes. Up to the end of the year, this campaign had had little effect other than to make the railways recede somewhat from their historic opposition to the waterway, but the waterways interests on the large rivers, particularly on the Mississippi, have taken heart and are evidently endeavoring once more to revive the almost forgotten days of inland navigation. (See also IX, *Waterways and Harbors.*)

The summer of 1917 saw also the completion of two of the main branches of the New York State Barge Canal, the enlargement of the old and famous Erie Canal across the state. The enlarged canal was operated for practically its full depth of 12 ft. from Oswego on Lake Ontario and from Lake Champlain down to the Hudson and the open sea beyond. Thus boats of nearly 12-ft. draft (10 ft. being the maximum prescribed by the Government although the canal depth is a minimum 12 ft.) could pass from the upper Great Lakes through the Welland Canal into Lake Ontario and thence to the ocean. From Rome west to Lake Erie the old Erie Canal will be in service until the season of 1918, when that section of the Barge Canal will be completed.

In spite of this new and deeper channel, the traffic over the New York canals in 1917 was very light. The Barge Canal has been under construction since 1904, and apparently the people of the state had become accustomed to the fact that it was only under construction, for little or no preparation for its opening in the way of enlarged boats or the organization of freight-handling companies had been made. In June, however, a traffic manager for the canals was appointed, and he immediately started a campaign for a wider use of the canal system. It is hoped that in the season of 1918 the waterways will get the business apparently ensured by present conditions.

The enlargement of the Welland Canal to carry ships has been suspended by the Canadian Government, probably because of lack of funds. One important move in inland navigation was made when the U. S. Government was authorized by the Rivers and Harbors Act to purchase the old canal connecting the heads of Delaware and Chesapeake Bays. This canal is one of the string of coastal waterways long urged for government control by the advocates of waterways.

The Lake Erie and Ohio River Canal Board appointed by the governor of Pennsylvania to investigate the feasibility of a barge canal between these two waterways presented a majority report in favor of the project, one of the seven members of the Board reporting adversely. The majority report recommended a canal 12 ft. deep, with locks 56 ft. wide and 400 ft. long, running from the mouth of the Beaver River in Pennsylvania, *via* the Shenango and Mahoning Rivers, across the summit level near Rock Creek, Ohio, to Lake Erie near Ashtabula. Such a canal would be 101.5 miles long, and would have 26 locks rising 232 ft. from the river to summit and falling 327 ft. to the lake. The report has not been acted upon. (See also IX, *Waterways and Harbors.*)

Flood Protection.—The largest flood-protection project ever undertaken in the United States, that of the Miami River above Dayton, Ohio, was started in 1917. This is the work undertaken by the well known Miami Conservancy District, which was organized following the floods of 1913 (*A. Y. B.*, 1913, p. 578). The design has been under way for two or three years, but it was not until Nov. 15 that the first contracts were asked for the work. These totalled about $10,000,000, and included five large dams, road construction, levee building, river-channel excavation, retaining walls, revetments, etc. Contractors could not be persuaded to bid, so the work was undertaken by day labor under the direction of the engineers. The essential feature of the Miami flood-protection scheme is the construction of five large earthfill dams which under normal conditions will be in front of dry reservoirs. In times of flood or prospective flood these reservoirs will be allowed to fill, thereby holding the water to be distributed equably down the stream without damage to the lower district. In addition to these reservoirs there will be the necessary river correction and improvement so that the normal river flow may be carried without damage to the riparian country.

The Columbus, Ohio, flood-protection scheme has had a more difficult road to travel. A Conservancy District was organized in Franklin County similar to that in the Miami district, but the project proposed by the Franklin District was defeated before the courts in January (see also IX, *Reclamation*). The City Council of Columbus then adopted a project of the city engineer, which is based on an improved channel width through the city and certain other retaining-wall and channel improvements above and below the city, and that project was started late in the year.

Another notable river-improvement and flood-protection scheme was adopted by the Board of Public Service of St. Louis for the treatment of the River des Pères, a small stream running directly through the city. This stream has often been in flood, causing great damage. The plans provide for carrying the stream in two reinforced-concrete sewers for about four miles and in a large open channel for about nine miles. The enclosed channels are very large, being twin arches each 29 ft. wide and about 24 ft. high. The plan has been approved by the city but has not yet been undertaken. A somewhat similar scheme for treating a small, flashy stream through a city is well under way at Erie, Pa., where a flood, in the highest degree disastrous, some years ago wrecked a number of downtown buildings.

Harbors.—The abnormal increase in shipbuilding, with its promise of a real American merchant marine, has naturally reacted on harbor development, though possibly not so much as might have been expected. In none of the big harbors has any great development been projected. Boston is still in the throes of political control. New York is just completing its new piers at Forty-sixth Street, on the North River, but has announced nothing new, although an interstate commission to study the port has been appointed by the governors of New York and New Jersey. Philadelphia is continuing the $19,000,000 work started in 1916 (*A. Y. B.*, 1916, p. 555). The smaller ports, however, are looking forward to a great future and in a number of cases are preparing for it by well considered plans. This is the case at Mobile, Ala., Wilmington, Del., and Portland, Ore., particularly, in all of which extensive municipal projects are under way. A proposed municipal enterprise of considerable magnitude at Bayonne, N. J., on Newark Bay was killed by popular vote in July. This scheme comprised piers and deep-water docks, with railway connections, and storage warehouses and factories similar to those so successfully operated at the Bush Terminal in Brooklyn. (See also IX, *Waterways and Harbors*; and X, *Municipal Ownership*.)

Subways and Rapid Transit.—No new developments in rapid transit are to be noted in 1917. In New York, Philadelphia and Boston the projected subways and elevated lines continued as per schedule. All of them are now rapidly approaching completion, though Philadelphia's system, which was started last, is farthest from operation. In Cincinnati work was started on the rapid-transit line which will link up the suburban and interurban connections through a fast line in the right-of-way of an abandoned canal. In Chicago another report on a proposed new system was made toward the end of 1916, but no action has been taken pointing toward a definite scheme of construction.

Buildings.—The shortage of all building supplies, or rather the high cost of such supplies and the demands for government construction, restricted building operations during 1917. Structural-steel deliveries even at the high prevailing prices were many months late, so that it was practically impossible to count on any immediate erection. In consequence typical steel-frame buildings were few and far between. New city office buildings, hotels, apartment houses, etc., which during the past few years have been almost universally of this type, were fewer in number than in any recent year. Warehouses, factories and loft buildings, which the demands of the war made necessary even at a high cost, continued to be built, but they were usually of concrete or of timber. These latter materials, therefore, showed an increased use in 1917 in building work. While they shared in the general increase in cost, they were obtainable, which was more than could be said of steel. Among the buildings of this type started in 1917 is the Bevo Building of the Anheuser-Busch Brewing Association at St. Louis, which is the largest concrete building in the world. It occupies an entire city block, 542 ft. on one side and 602 ft. on the opposite parallel side, the distance between the two being 252 ft. There will be eight stories above grade and a 26-ft. shipping story below grade. The total floor area is 24.75 acres and the cubic contents of the entire building 21,335,000 cu. ft.

Concrete.—The use of concrete continues to increase, both for structures and for roads. During 1917 the former use has been accelerated by the high cost and scarcity of other materials, especially steel. The increased use in roads is due to the greater care being put on concrete roads and the consequent good roads, as well as to the wide publicity campaign for concrete roads conducted by the cement manufacturers. With the increased use of concrete is growing an appreciation of the need for better concrete. The knowledge that concrete-making methods fall far short of perfection is not of recent origin. Precautions and advice as to how to make good concrete form the bulk of early concrete literature, but until recently practice lagged far behind such precepts. The observation of much concrete deterioration, however, has persuaded those interested in its use that radical steps are necessary and that the practical worker must be forced to follow rules laid down by students of the material.

Of the three ingredients of concrete—cement, stone and water—the cement was earliest studied and perfected, so that now it is probably the least critical of the three elements. Aggregate, that is, the stone, was the subject of investigation for many later years, and rules for standardization now make its selection and treatment fairly certain. The third ingredient, water, was long neglected as a factor in good concrete, but it is now assuming a most important aspect. It is certain that either too much or too little water is dangerous, and the exact amount for perfect concrete is now the subject of most serious study.

A report on concrete in sea water by R. J. Wig of the U. S. Bureau of Standards and L. R. Ferguson of the Portland Cement Association was a notable contribution to the subject. These investigators visited practically all the marine concrete structures in the United States and found alarming examples of deterioration. It is their conclusion that all concrete in sea water will be attacked by the chemical action of marine salts if the hard surface skin is abraded by mechanical action, and that all reinforced concrete in which the steel is of slight embedment will crack and decay, due to the action of the salts in corroding the steel, to which the sea water or air will penetrate by porous percolation. The remedies suggested are absolute protection against mechanical abrasion, precautions to ensure the densest concrete, and protection of the steel by a good depth of concrete, just how much not being determined as yet.

Fires.—Fires in two concrete buildings in the latter part of 1916 directed attention anew to the infrequently considered hazard in such construction. The larger of these fires was in the Quaker Oats factory and warehouse, at Peterboro, Ont., on Dec. 11, 1916. Here a rapidly spreading fire started in a fireproof warehouse laden with cereals and other equally combustible material. The flames soon jumped a 60-ft. court to a reinforced-concrete building six stories high and 60 ft. by 280 ft. in plan. This building, though of the highest type of reinforced-concrete construction, was not only gutted in the course of a ten-hour fire, but was so completely wrecked as to make its removal necessary; in fact, a large section of the building collapsed. The lesson of this fire lies not so much in the destruction of the concrete, although that is interesting, as in the demonstration that there is no absolutely fireproof structure. So far as the construction of this building alone is concerned, it represented the highest type of the fire-protection art, but it was exposed to highly combustible buildings, it was not provided with proper water supply for either mains or sprinklers, and the necessary watchmen were not present. Under these conditions a fire once started in its cereal content soon reached a temperature no material could resist.

The other fire in a concrete building was on Nov. 10, 1916, in a warehouse at Far Rockaway, L. I. Here the initial fire was in an adjoining and connected frame structure which was completely destroyed. The fire passed into the concrete building through a very small opening, and while the contents of the building were not highly combustible and were destroyed only in part, there were some remarkable failures of the concrete structure. These were later explained by one expert investigator, by the fact that the concrete was made of quartz gravel. His theory is that quartz in its crystalline form subjected to high temperature expands and by a series of minor explosions destroys the structure of the concrete.

On May 21, one of the largest conflagrations of the year occurred at Atlanta,, Ga., starting in a small frame building at a time when three other fires were raging in different parts of the city. By the time protective efforts had been organized, embers of the original fire had lighted wooden shingles on nearby dry roofs, and the series of conflagrations soon started extended over a large area a quarter to half a mile ahead of the fire department. The fires devastated a total of about 300 acres. The number of buildings involved was 1,938, of which 47 were brick and 1,891 frame. Classified by occupancy there were 1,537 dwellings and apartments, 42 mercantile, 350 garages and outhouses, and eight miscellaneous occupancies. Of the total number of buildings about 80 per cent. had shingle roofs. The total property loss was about $5,500,000, of which $3,500,000 was covered by insurance. About 10,000 people were made homeless. This fire illustrates the ease with which rapidly spreading fires may develop in cities where wooden shingle roofs predominate.

Railroads. — Railroad engineering continues to be confined to maintenance and, in small measure, the removal of grade crossings. No important construction programme can possibly be undertaken until after the war or until labor and material charges resume their normal balance. New stations already started, such as those at Chicago and St. Paul, are being carried on, but many terminal projects, though ready in the design offices of the railways, are being held up for more favorable conditions. For the year ending June 30, 1916, the last official report, the increase in mileage of railroads in the United States was 3,802 miles, of which 1,641 miles were single or new track and the remainder in sidings. (See also XIX, *Railroads.*)

Bridges. — The most important event of the year in bridge construction was the completion of the Quebec Bridge. The suspended span of the bridge was finally lifted into place on Sept. 20, 1917, thus assuring the final operation in the completion of the largest bridge in the world. The first train was run over the bridge on Oct. 17. The operation of 1917 was a duplication in all but one or two details of the lifting operation of 1916 which turned out so disastrously.

The Quebec Bridge, spanning the St. Lawrence River about seven miles above Quebec, was built by the Canadian Government as a part of the Canadian railway system. It is 1,800 ft. between the pins on the massive piers which border the river, thus making it the longest span bridge in the world, surpassing by 100 ft. each of the twin spans of the Firth of Forth Bridge in Scotland. The bridge was started early in the century, but on Aug. 30, 1907, when the cantilever on the south side of the river was well out from its pier, the steelwork collapsed; the structure was completely wrecked and 80 men were killed. This failure was undoubtedly due to under design, and the plans were completely abandoned and a new bridge started. This bridge was similar in dimensions to the old but very much heavier in detail. In 1916 the two cantilevers had been built, and the 640-ft. suspended span was ready to be placed to complete the structure. This span was put together on a pile trestle a short distance out from the shore some three miles from the bridge, and floated down on scows to be lifted into place. The operation proceeded successfully up to the point when the suspended span was about 20 ft. above the scow, when it slipped off the shoes designed to hold it and disappeared in the river. (*A. Y. B.*, 1916, p. 552). Work was immediately started on the refabrication of an exactly similar bridge, and in 10½ months, another 5,400-ton structure was ready to be lifted. In the second attempt an improved detail was substituted for the shoe which failed in 1916, and the erection was safely made in three days.

No other remarkable bridge work was projected in 1917, though the several large steel bridges across the Ohio River were brought very near completion. Several long and expensive concrete viaducts were started, notably at Columbus, Ohio, Akron, Ohio, Birmingham, Ala., and Bethlehem, Pa., but these were all of standard and accepted designs. The problems of crossing the Hudson River at New York, the Delaware at Philadelphia, the bay at San Francisco, and the Mississippi at New Orleans are still under consideration, but the decisions whether these crossings shall be bridge or tunnel have not been made. A bridge at any of these four locations would rank among the great bridge structures of the world.

Tunnels.—While no radical advances are being made in the art of tunneling, there is probably no field of engineering work in which there is more steady progress. In compressed-air tunnels, those being built under the East River for the New York subways represent improved practice with their deep and wide blanketing of the river floor, the filling of the voids along the shield with air-forced gravel, and the rapid control of face work. In rock tunnels the recently completed Rogers Pass tunnel for the Canadian Pacific Ry. (*A. Y. B.*, 1915, p. 558) was a decided step forward in the use of a central pilot tunnel from which rings were blasted. In lining soft-ground tunnels the use of concrete blocks instead of the old cast-iron segments in the Cleveland water tunnel under Lake Erie is a new development, and one which today is particularly applicable in view of the high cost of iron.

Water Supply.—The effect of the war on municipal water supplies has been mainly in the increase in the cost of chemicals used in some types of water purification. While there may be some large cities contemplating increased or new supplies which have postponed such improvements until after the war, no such instances have gone beyond the city councils or water departments. The two large new water supplies, those for Providence, R. I., and San Francisco, Cal., were continued with appreciable progress, and two others at Hartford, N. Y., and New York City, were completed, the Catskill supply at the latter city being dedicated with appropriate ceremony on Oct. 12 (see also X, *Water Supply*). The reduced importation and consequent increased cost in chemicals, however, seriously discommoded many cities. Alum, used as a coagulating medium in mechanical filters, and chlorine, used either as a gas or a salt for sterilization, were both high in price. In consequence a number of cities started plants for the manufacture of alum from low-grade aluminium ores easily obtained in this country, and at one city, Montreal, the electrolytic manufacture of chlorine was commenced. Alum plants were installed at Columbus, Ohio, Columbus, Ga., Trenton, N. J., Springfield, Mass., Omaha, Neb., and Montreal, Que. In all cases the production was cheap and successful. (See also XXIII, *Sanitary Chemistry*.)

Rapid growth of the filtration of public water supplies is shown by statistics recently compiled. They show that in 1917 there were 784 water-filtration plants in the United States and Canada, as against only some 50 in 1900. This total includes only 443 municipally and 333 privately owned filter plants supplying municipalities and but eight plants owned by the U. S. Government, leaving out of account the numerous industrial, institutional and other isolated private plants, which together must run into the thousands. The rapid progress of filtration is further illustrated by the fact that the municipal filtration plants in use in 1900 supplied only 2,000,000 people, compared with 10,000,000 supplied in 1910 and approximately 20,000,000 who are at the present time enjoying the benefit of filtered water. As a further instance of filtration progress, the statistics call attention to the fact that some 20 years ago the average bacterial removal of 96 per cent. was considered fairly good, whereas at the present time results are looked upon as somewhat suspicious unless the bacterial removal is over 99 per cent.

ELECTRICAL ENGINEERING

C. D. Fawcett

General Survey.—The entrance of the United States into the European War has had an influence on industry that has set forward certain branches of electrical engineering to a point which otherwise possibly might not have been attained for ten years. Broadly, the necessity for quick production and for rapid and efficient transportation, on land, on sea and in the air, and the lack of materials, fuel and labor for productions by old methods have been the chief factors tending to advance the popular and almost universal use of electricity.

In certain branches of the electrical industry, including the manufacture of generators, motors and power-transmission apparatus, research and invention have been temporarily suspended in favor of large production of existing models. On the other hand, telephony and telegraphy, having to provide means of communication under most difficult conditions of operation on land and sea and in the air, have experienced a year of intensive research and invention. Marine transportation, especially in the naval operations of the United States, has been practically dominated by electrical propulsion, power and lighting equipment. This is particularly true of all the new-model battle cruisers and transports under construction or on order. Congestion at freight and express terminals has hastened the adoption of the electric truck as an efficient and powerful means of delivery. Scarcity of gasoline and improvements in storage batteries and charging facilities make the struggle between the gasoline and the electric vehicle an interesting contest for supremacy (see also *Automobiles, infra*). Machinery of war, including artillery, machine guns, airplanes, trucks, portable communication stations, etc., have been extensively equipped with electrical devices. Night operations in civilian, industrial and military districts have increased the demand for adequate illumination, and many special problems have been solved in this field. Electric motors have replaced thousands of other power motors in such industries as mining, oil drilling, flour and grain machinery, cotton mills, textile factories and machine shops. Increased power has been provided through additional central-station equipment. The strict censorship necessarily placed upon particular problems under investigation has prevented the publication of much specific information. Also for military reasons, details of new installations of power equipment and industrial operations must be withheld for the present.

In the commercial field trade with foreign countries has been especially active. The Department of Commerce gives the following values for exports of domestic electrical apparatus for the twelve months ending June, 1916, and June, 1917.

	1916	1917
Lamps	$1,445,604	$2,317,159
Locomotives	452,324	527,034
Meters and instruments	4,218,974	5,895,696
Telegraph instruments	148,536	539,386
Telephones	1,329,346	1,953,504
Transformers	993,193	1,265,459
All other	13,972,994	24,529,375
Total	$30,709,102	$52,685,807
Per cent. increase		71
Batteries	$1,569,836	$3,266,674
Dynamos and generators	1,468,961	2,554,504
Fans	356,729	482,652
Wire and cables	3,157,239	7,191,684
Interior wiring and supplies	818,985	1,123,628

The tendency toward localization and combination of the activities of the great technical societies of the countries has increased during the year. When one considers the great economic, technical and broadening influences of a concerted movement towards combining all branches of engineering ability, temerity to predict a complete merger of societies' interests without loss of the individuality of each need not be too strongly tempered with caution.

Central-Station and Power Apparatus.—The trend of regulation by public-service commissions throughout the country has been to increase the effectiveness of service to the consumer and at the same time to provide adequate interest on invested capital. A number of important cases might be cited in which, contrary to former decisions, the owners of public utilities were allowed an increased rate or concessions tending to protect their investments. The outstanding feature of these cases is the fact that rates for electric energy are coming to the point where value and cost to the consumer are equal. Whether or not given rates can with justice be maintained depends on many factors, but the conclusion can certainly be drawn that the use of electric energy will be greatly extended by the fair decisions handed down during 1917. (See also X, *Public Services.*)

Interesting statistics on the installed water power of the United States have been compiled and presented before the American Institute of Electrical Engineers. It was shown that while the total percentage of central-station power generated by water is only 21 and 22 per cent. for the New England and Middle Atlantic states, it is nearly 60 per cent. on the Pacific Coast. A total of 7.2 per cent. of all central-station power in the United States is hydro-electric, Washington, Oregon and California having 4.6 per cent. of all the central-station power of the United States.

Due to the high cost of fuel and oil and the uncertainty of supply, a number of isolated plants in the Far West have been forced to depend on the larger central stations for supply of power. This movement to merge the isolated into the central-station load is a forerunner of increased efficiency and lower rates. It emphasizes the statement frequently made that the power systems of the country will be operated in a few years as a group of interconnected power-producing units. The absorption of the isolated plants in the Middle West and the East is also destined to follow. Another example of consolidation of service is that of a group of several small towns in the Middle West, having a total population of 3,500, which were all interconnected by an iron-wire line 22½ miles in length strung on cedar poles. The net earnings on the total investment amounted to 12 per cent., while the consumers were well satisfied with the service. Statistics for the year 1916 show that approximately two-thirds of the central-station energy of the country is generated by 41 companies and is chiefly from hydro-electric stations. The increase of consumption for that year was more than two billion kilowatt-hours and the total energy consumed was 17½ billion kilowatt-hours.

Mention of the tendency toward much higher steam pressures was made in the YEAR BOOK for 1916 (p. 570). Turbines designed to operate at 250 lb. pressure and 250° of superheat have been installed at the Buffalo, N. Y., plant. A maximum steam temperature of 656° is reached at the throttle. The turbines are connected to 22,222-kv-a, 12,000-volt, three-phase, 25-cycle, two-pole synchronous generators.

The following table is typical of the increased cost of central-station operating expenses; it shows the percentage of increase of prevailing prices over normal, computed from the reports of a large number of Middle Western steam stations:

	Per cent. Increase
Coal	194.00
Labor	32.67
Copper	144.86
Miscellaneous supplies	65.91
Taxes	48.41
Equipment	51.14
General operating	45.50

A development of the year that may have some influence on economy of power production has been that of the use of powdered coal in furnaces (see also XVII, *Coal, Coke, and Petroleum;* and A. Y. B., 1916, p. 570). Some of the advantages of the quick feed and spraying of oil-burner types of furnaces are also realized in this new process, although the dry storage of the fuel is a problem.

An important adoption of the induction-generator is that of its installation in remote districts in unattended plants. The inherent characteristics of this generator provide for its excitation from synchronous alternator lines. Should the source of this magnetization fail, the induction-generator simply drops its load and continues to run idle on the synchronous system. The economies affected make this a desirable unit for isolated load centers where cheap water is available. Several new and successful installations have been made during the year.

The large manufacturers of the country have under consideration the installation of several transmission systems carrying energy at 250,000 volts. The present maximum is 150,000 volts. The sudden decision to attempt a raise of 100,000 volts is startling. It involves problems of higher insulation in all machinery, switching and transmission apparatus. Confidence in ability to solve these problems and considerations of economy in the saving of copper are the chief factors in favor of the project. The year 1918, provided the pressure of the war is not too great, should show interesting developments along this line. Improved design of porcelain and glass insulators, in which considerable advance has been made during 1917, will be an important factor in successful operation at higher voltages.

The high cost of copper has initiated the use of iron-wire transmission lines on certain short-distance systems of low capacity. The most common case is that of the necessity of providing light and power to small communities somewhat distant from an existing network. The use of iron wire on such systems provides a strong, economical and reliable line for such service. The continued use of such lines, however, in view of possible changed conditions in the future, is questionable.

Wattless current purposely driven through long transmission lines during excessively cold weather has prevented the formation of ice loads and the line troubles which develop therefrom. By careful adjustment of the normal load and the wattless current the ice load can be regulated. This scheme has been successfully worked out by the Pennsylvania Water and Power Co. at its Hauto plant. By coating with water-glass the surface of insulated wires passing over railroad tracks, or where otherwise exposed to hot gases, the life of the insulation has been lengthened.

The value of current-limiting reactors in generator and feeder circuits has again been attested by the prevention of a number of serious accidents which would otherwise have resulted from cable faults. One instance is that of the Commonwealth Edison Co. of Chicago, where 80,000 kw. of load was opened by the circuit breakers before the trouble was cleared. A maximum of 58,000 amp. flowed into the fault. Had the reactors not been in circuit, double the current would have resulted, and probably many sections of cable and much rotating and auxiliary apparatus would have been destroyed. Many such cases might be cited.

Many tests and careful statistical records during the year on the capacity and distribution of inherent losses in distributing transformers show a marked advantage in increasing the capacity and feeding longer secondary mains. This is due in large part to the production of more uniform iron of lower hysteretic and eddy-current losses and to a better average diversity factor—maintaining a uniform load over diversified periods of the day.

One of the important changes on line-protective apparatus has been the replacement of the well known "horn-gap" equipment on aluminium-cell lightning arresters by the ball-gap. This replacement appears on most apparatus for lines over 7,250 volts rating. The ball-gap provides a more uniform sparking distance, discharges faster than the horn-gap, and has a shorter dielectric spark lag. The use of condensers for line surge and lighting protection is still under investigation, but a few new commercial installations have been made.

The largest self-controlled induction regulator has been built during 1917. It is rated at 600 kv.-amp., three-phase, 60-cycle, 13,200 volts, with 10 and 20 per cent. regulation at 262 and 131 amp. respectively. The transformer was built for the Southern Power Co.

Among other conditions brought about by the war is that of the necessity of the increased production of nitrates. Per acre of cultivated land Europe uses 200 lb. of nitrates per year compared with 28 lb. normally used in the United States. This approaches a consumption of 9,000,000 tons in this country. The demand for nitrates for the manufacture of explosives, as well as for necessarily more intensive fertilization of the soil, has developed a larger adaptation of hydroelectric power to the manufacture of nitrates. We may look forward to this as one of the principal future developments of the electric industry. It may be considered that roughly 1.2 kw. of hydroelectric energy will extract from the air a ton of sodium nitrate per year. Rock Island, Ill., is one of the proposed sites for a government nitrate plant. Available water supply and auxiliary steam-plant equipment, together with good transportation facilities, make this a desirable location. (See also XXIII, *Agricultural Chemistry.*)

The development of reduction gears in the last few years has had a very favorable influence on the electrical industry. By means of them it is possible to maintain the high-speed features characteristic of the electric motor or generator. High speed in electrical machinery means economy in material, labor and space. The cost is correspondingly low as compared with the low-speed machines. As a result of reduction gears the high-speed generator may be driven by a slow-speed prime mover, or a high-speed motor may drive a slow-speed machine. Roughly, the production of these gears has increased 300 per cent. during the year over the production of 1916. The gear efficiency is of the order of 98 per cent.

Much progress has been made during 1917 in speed control of motors, especially those used for steel-mill drive. By a modification of the Scherbius system a constant voltage at rotor frequency is used to oppose the secondary voltage, thus controlling the torque component of rotor current. No external resistance is used.

The scarcity of labor and transportation facilities for the coal supply of the country has influenced a number of mine operators to replace steam with electric-operating machinery. Economy in time and labor has resulted. Comparisons of the monthly operating expenses of one concern show an over-all economy of 1.7 cents per ton in favor of the electrically equipped mine.

There has developed an increasing demand for the abandonment of complicated starting devices for small motors. Many new devices have been developed. The most prominent are those which have been designed to start motors of 10 to 15 kw. capacity with only one or two steps of starting resistance, these steps being thrown in automatically upon the closing of the main switch.

Electric Traction.—In view of the practical and successful development of the regenerative braking system in use on electric railways, it seems quite likely that this will prove to be one of the main factors that will tend to cause the electrification of existing steam systems. The United States boasts of 358,000 miles of steam railroads, as compared with 217,000 miles in Europe and 117,000 miles in Asia, Africa and Australia. The electrified mileage of trunk lines in the United States is approximately 2,500 miles—double the steam-road mileage which has been electrified in Europe. The successful operation of the electrified division of the Chicago, Milwaukee and St. Paul Railway in the Rocky Mountains has led that company to authorize the electrification of the Cascade Mountain division. At the close of the war a new era in electrification of steam roads seems to be assured.

The high price of gasoline and scarcity of gasoline cars, due to the conversion of automobile factories into munition plants and to the demand of the Government for these vehicles, has helped to create a demand for the electrically driven machines. Foreign sales of American-made trucks are increasing faster even than the domestic sales. There are now in daily use nearly 22,000 electric passenger vehicles. At least 75 per cent. of these are in cities where special rates for battery charging are made at off-peak periods. The commercial electric vehicle is also gaining in favor with many of the large wholesale and retail dealers. The annual energy consumption of these commercial cars approaches 100,000,000 kw.-hr. The cost of upkeep and charging service is decreasing. These two factors have given great impetus to the sale of such vehicles during 1917. Hartford, Conn., is a typical example of a city in which the electrically driven pleasure car is the favorite means of transportation. Some 420 pleasure cars are licensed. Memphis, Tenn., has an annual electric-vehicle load of 600,000 kw.-hr. Three hundred vehicles are in use, of which 245 are passenger cars and 55 are trucks. If a portable and easily exchangeable source of supply could be added to the electric vehicle, its supremacy over the gasoline car would be apparent. There are indications that this will come. The "battery-exchange" plan, by which one spent storage plant is removed and a fully charged battery inserted, is being tried out. Coöperation of the vehicle manufacturers and the supply and charging-station dealers will secure this result. (See also *Automobiles, infra.*)

The Emergency Fleet Corporation of the U. S. Shipping Board has gone extensively into the market for electric power and supply equipment for battleships and transports. Thousands of generator sets, switchboards and lighting equipments have been manufactured or are on order for early delivery. The Navy Department has ordered a large number of electrically propelled battle cruisers and destroyers. A limit of $19,000,000 is placed on the construction of each battle cruiser, covering the cost of hull and machinery without other equipment. These vessels will displace 34,800 tons and will be 850 ft. in length. The horse-power rating of each is 180,000. The generators will be driven by steam turbines and will supply four motor-driven shafts. Every tendency at this time is to replace steam with electric drive.

Illumination.—The year has been marked by a steady growth in the perfection of methods and appliances in illumination rather than by any striking development or elaborate display. The use of color is developing, and there is a growing appreciation of the importance of color in the science and art of illumination. In tungsten lamps the 50-watt size has come into considerable prominence, displacing to a certain extent the 40-watt size. The range of small-size vacuum lamps standardized is 10, 25, 50, 75, and 100 watts. In the gas-filled type a 150-watt size has been brought out to meet the demand for something between the 100-watt and the 200-watt lamp. For flood lighting 200- and 400-watt lamps are now being used in place of the former 250- and 500-watt sizes. The use of the blue bulb for incandescent lamps, in order to get a light more nearly like daylight in color, is growing rapidly.

Incandescent lamps with concentrated tungsten filaments are used as light sources. The European demand for portable gasoline-motor electric-generator searchlamp outfits has continued not only from countries at war but from others. The United States is also requiring searchlamps, and the increased amount of ship building has created a demand apart from war purposes. Progress in the manufacture of colored glass has resulted in the production of a yellow glass which can be used in signal lanterns and which will give a bright light which can be seen for long distances and not be mistaken for a white light. As a consequence the use of white lights for signaling purposes on railroads will probably be discontinued.

Data obtained from 26 American cities indicate that lighting for illumination, produced by units of moderate intensity and spaced so as to produce an even and continuous lighting effect, is coming strongly into favor and replacing beacon or spectacular lighting by high-power units placed at considerable distances apart and usually high above the street or sidewalk level. The advent of the gas-filled tungsten lamp has made available a line of light units flexibly rated from the smallest size to the largest size demanded and operating at an efficiency consistent with the size of the units. One of the most recent applications is in the illumination for protective purposes of the approaches to bridges, trestles, aqueducts, piers and other situations where night watching is necessary. Protection of industrial plants is growing in favor and extending rapidly, and although it is only a comparatively short time since war was declared by the United States, much has already been done in all parts of the country to protect industries by the use of flood lighting. The flood lighting installation which was put in to light the Capitol at the time of the President's inauguration was so satisfactory it has been made permanent. Eighty-four projectors each equipped with 400-watt flood-lighting lamps are placed in four banks located about 200 ft. from the dome on the corners of the House and Senate wings. As was anticipated, the most striking flood-lighting experiment of the year is that of the Statue of Liberty in New York Harbor (*A. Y. B.*, 1916, p. 563). Properly to illuminate apparatus and wiring in high-tension electric transmitting stations has been a problem. Air-break switches and lightning-arrester gaps are usually placed at great heights and their illumination is even more important than that of indoor apparatus. In some instances a satisfactory solution has been found in the use of flood lighting. In order to show the possibilities of good lighting a model block in New York City has been illuminated. Lighting schemes were designed for the show windows of the 17 stores in the block, each being lighted differently, particular attention being paid to color effects. The use of concealed sources located in side-wall brackets, boxes or coves is growing in favor for theatres. As in the immediately preceding years, a marked tendency to eliminate glare is noted in all classes of lighting, yet a higher average intensity of light is being favored.

Much might be said of the progress shown in the use of light in signs and displays. Recent applications of transparencies in the sign-lighting field indicate a growing value for this type of illuminated advertising. The absence of glare makes this style of sign very desirable. Electrically illuminated signs have done much to increase the effectiveness of governmental propaganda for the prosecution of war.

Telephony and Telegraphy.—The necessity for reliable transmission of information in war activities has greatly developed the field of portable wire and wireless outfits. The lightweight sending and receiving sets are now easily carried by mules and by motorcycles, and in some cases even on the backs of men. The airplane generator sets are usually driven by windmills or belts connected to the driving shafts of the motors. The land sets are driven by hand power.

The San Diego wireless station was completed and put in operation early in the year. The Arlington, Va., station has a range extending from Panama to Nova Scotia and from Gibraltar to the Pacific Coast. The installation of the San Diego plant can now return messages to Arlington and relay messages westward to the Philippines and other Pacific islands. The plant uses arc generators and is rated at 200 kw. During the year radio experts have developed arc generators whose rated input power runs up to 350 kw. One station at Cavite, P. I., has installed generators of this capacity. Plants in Hawaii, Guam and Alaska are projected. The plant at San Diego has successfully communicated with Panama, Alaska, Arlington, Va., and Australia, over distances up to 6,000 miles.

An experimental "radio-lighthouse" has been installed at Fire Island, N. Y., by the Hydrographic Survey for the purpose of giving bearings to any ship whose receiving station is within range. The transmitter sends out a "cycle" of short impulse at intervals of one second, the direction of maximum radiation changing automatically by one point of the compass for each impulse. By turning his receiver to the Fire Island waves the operator on board any ship at sea may thus be advised of his position with respect to one point of the compass. Another station at, say, 100 miles distant from Fire Island might give him his location with respect to another point of the compass and his actual geographical location could then be determined. The further developments of this "wireless compass" will be watched with interest.

Research and Invention.—The Underwriters' Electrical Bureau has established a new laboratory in New York, augmenting their facility for testing electrical devices with particular reference to safeguarding property and lives.

The YEAR BOOK for 1916 (p. 566) mentioned the development of the hot-cathode, argon gas-filled rectifier. At present these units have been developed for commercial purposes in three sizes, the smallest having a capacity of three amperes when charging three cells of lead battery, and the largest a capacity of six amperes when charging from one to 30 cells. These devices are known as the "tungar" rectifiers, although operated on the same principles as the "kenotron" rectifiers previously mentioned.

The substitution of an artificial for the human eye in photometric operations seems to have much merit in that it will produce accurate and consistent results. It consists of a wire grid and a film of potassium separated in an atmosphere of argon under low pressure. The film is connected to the negative and the grid to the positive side of the battery. A light shining on the film causes it to give off ions in proportion to the intensity of light, which convey small charges of negative electricity to the grid. A sensitive galvanometer or electrometer will indicate the current flow and thus measure directly the intensity of light. The device ma prove to be of exceptional value in photometric work.

The phosphoroscope is a new device designed to determine the fluorescence and phosphorescence of various compounds. The instrument operates by projecting ultraviolet rays at short intervals on to the substance under examination and then exposing the substance to the eye between these intervals. A rotating cylinder containing the specimen under investigation provides the means of the successive exposures and observations.

The permeameter has been used to an increasing extent to determine the hysteresis and permeability of steel alloys and steel. Also the electric furnace, to which particular attention was directed in the review of 1916 (*A. Y. B.*, 1916, p. 567) has assumed a still more important place in the production of homogeneous metals of known chemical and physical properties (see also XVII, *Iron and Steel;* and XXIII, *Electrochemistry*). These two processes have done much, both in this country and in Europe, to facilitate manufacture of munitions and military equipment.

Automatic temperature controllers for gas, oil and electric furnaces have been developed. The elements of operation include electric pyrometers and thermometers, an electric contact-closing device and the operating element, which consists of an electrically operated valve controlled by the closing of the contact device.

In order to study the number and frequency of discharges into a lightning arrester, two new discharge-recording instruments have been developed—a coherer type and a spark-tube type. The first involves the ordinary principles of the wireless coherer acting as a relay to the recording circuit, while the second affords a selective path for the high-voltage surge which causes a path of conducting ions between the gaps of the spark-tube, this path serving to complete the direct-current recording circuit.

There seems to be a steady tendency towards standardizing on the metric system of units. While the war has restrained wider adoption, due to the necessity of production under existing standards of measurement, plans are being made by many scientific, educational and industrial organizations to adopt this universal system after the war.

AUTOMOBILES

Joseph A. Arglada

During the past year there have been no radical changes in the design, construction or manufacture of automobiles. The industry can now be considered as absolutely staple and permanent. An indication of this is the elimination of the term "pleasure car" and the substitution of the term "passenger car", because ninety per cent. of the passenger automobiles are used for business purposes, making the term "pleasure car" a misnomer.

Among passenger car manufacturers, the larger companies have devoted more attention to the manufacture of trucks than formerly, and some of these contemplate manufacturing trucks to the exclusion of passenger cars, largely as the result of Government orders. The United States Government engineers, in collaboration with specialists in automobile engineering, have designed three types of trucks for Government use: Type "AA" of three-quarter ton capacity; Type "A" of one and one-half tons capacity, and Type "B" of three tons capacity. These trucks represent the latest development in motor truck design and will be manufactured in great quantities for the Government during the continuation of the war and for commercial use after the war.

Another development in the motor truck field has been the truck unit, consisting of an auxiliary frame with rear axle and springs, to be attached to the frame of a passenger car from which the rear axle has been removed, thus converting the passenger car into a truck of one or two, and in some cases three ton capacity. These units have served and will serve more largely in the future as an economical means for disposing of used pleasure cars, which, though serviceable, are out of date for use as passenger cars. Most passenger car manufacturers are in favor of utilizing these units on used cars because they will serve to eliminate the second-hand car problem as regards the sale of new passenger cars and to promote the sale of new passenger cars.

The design of the passenger car chassis has undergone very little change during the past year. Bodies have become more pleasing in outline, and bodies having a standing top and windows arranged to enclose the passenger space completely or to be lowered to give the effect of an open car have become very popular and bid fair to be the standard type of body on all except the lowest price cars.

During the past year, a number of fuel substitutes for gasoline have been proposed, but all of these have been short-lived, so that gasoline continues to be the standard fuel for internal combustion motor cars. The sale of steam cars continues and promises to increase, because of the availability of kerosene as fuel for these cars and their close resemblance in appearance to gasoline motored cars, in addition to the pleasing characteristics of a steam-propelled passenger automobile.

During the coming year, the production of passenger cars will be limited by the available facilities of the factories in addition to the limitations of material available for passenger car production due to Government regulation, and also very largely to the fact that most automobile factories are now building trucks, or other products for the prosecution of the war.

AERONAUTICS

Alexander Klemin

Technical Progress.—The outstanding technical achievement of the year in aeronautics has been the development of the Liberty engine for airplanes. This engine is to be made in four models, having 4, 6, 8, and 12 cylinders respectively, and the design has been so standardized that the cylinders, pistons and numerous other parts will be the same for all four. It was designed by a number of the most prominent American aeronautical and automobile engineers in collaboration, and represents an amalgamation of the best features of both American and European practice. The engine is to be made in a large number of factories and machine shops, each specializing on a few parts and the whole being brought together only for assembly. The first of these engines was set up for test just before the Fourth of July, within 28 days of the time when the design was started. To make possible the testing of the engine under conditions closely resembling those of actual service, a chamber was constructed with suction blowers for keeping the air pressure about the engine reduced to that corresponding to the great altitudes attained in flight. Another important development in the engine field was the licensing of American firms to build Hispano-Suiza and Sunbeam engines from the French and English designs. The American Hispano-Suiza is already giving excellent service.

In the field of plane design, the year is characterized by an increasing specialization of types on the one hand and an increasing degree of standardization within each type on the other. There has been a general continuation of the tendency towards increase in power; engines of less than 150 h. p. now being the exception except for purely training machines, while units developing over 250 h. p. are by no means uncommon. The very largest employed up to the present time are the 12-cylinder Fiat, developing 600 h. p., and the 450 h. p. Sunbeam, which has 18 cylinders arranged in three rows. Triplanes are finding a constantly growing use, both for the very smallest pursuit machines and for the largest battleplanes and bombers. Combinations of more than three planes are not in use as yet, but are being considered for the very large machines of the near future. Several wing sections superior in efficiency to those formerly used were developed as a result of laboratory experiments by the Army early in the year (see "Bibliography", *infra*), but further work of a similar nature cannot be discussed, for military reasons.

Pursuit and combat airplanes have not undergone any marked changes, but have been refined in respect of maneuverability and climbing power. Several new types of wing trussing have been brought out with the object of reducing the resistance of the exposed wires and struts, but the wireless truss developed by Curtiss during 1916 has not found favor, due to structural difficulties. The Nieuport truss, embodying a narrow lower plane having only one spar, has been copied by the Germans in their latest and most successful pursuit machine, the *Albatross D. III.*

Battleplanes have increased largely in number and size. This type is best represented by the British Handley-Page, driven by two 280 h. p. Rolls-Royce engines, the German Gotha, with two 260 h. p. Mercédés engines, and the Italian Caproni, of which there are several types. The largest Caproni has three engines, developing a total of 1,800 h. p. and a carrying capacity of five tons of explosives and fuel for 12 hours. A smaller Caproni, capable of carrying 12 passengers, was brought to the United States during the summer and has made a number of long flights (see "Records and Flights", *infra*).

The most conspicuous machines of very large size in the United States were the twin-motored seaplanes built for the Army by the Burgess, Standard and Gallaudet companies and the mammoth flying boats of the Curtiss company. Each of the first three carries about 300 h. p. The two first mentioned are of the normal type (*A. Y. B.*, 1916, p. 579), with the engines on the wings and each engine driving a tractor screw. The Gallaudet seaplane is distinguished by the mounting of the propeller blades in a ring encircling the body, instead of in the conventional hub, and the driving of the propeller by gearing from either of the two vertical engines, which are placed side by side in the body, or from both together. The excellent body-form and structural advantages of the tractor type are thus combined with the military and observational merits of the machine with a propeller behind the wings. The largest of the Curtiss boats is the *H-12*, equipped with two 200 h. p. engines. The span of this machine is 93 ft. It weighs nearly 3 tons empty, and carries 1½ tons of passengers, fuel, bombs, etc.

A new type of seaplane float, about 20 per cent. lighter than the usual form, has been devised by Naval Constructor H. C. Richardson. The top and sides of the float are in one piece, semicircular in form, and are made up of alternate layers of canvas and veneer, the veneer being laid so that the grain of each successive layer runs in a new direction.

No new aerodynamic laboratories were put into operation during the year in the United States, but several are under construction or projected. Of especial value in scientific work will be the great government experimental plant at Langley Field, Hampton, Va., which is to be fully equipped for laboratory and full-flight tests of planes, engines, instruments and accessories.

The Pan-American Aeronautic Exposition, the first aero show of any magnitude to be held in the United States for five years, took place in New York in February, nearly all the manufacturers of aeronautical goods in America being represented. It proved invaluable as an index of progress and as a means of bringing engineers and manufacturers together, and will probably be an annual event hereafter, unless considerations of military secrecy prevent.

In respect to lighter-than-air craft there is less to report. No rigid dirigibles were built in America, and the utility of such balloons in naval operations is still a matter of doubt. The Navy took delivery of its first non-rigid dirigible, the *D-N-1*, the acceptance tests being carried out successfully at Pensacola, Fla., in May. This balloon is 175 ft. long, has a 140 h. p. engine, and carries seven men for two hours at a speed of about 30 miles an hour. Of greater importance was the contracting, also by the Navy, for 16 "blimps", or small nonrigid dirigibles having a body, propelling group, controls, etc., very similar to those of an airplane and carrying two men. These dirigibles are equipped to land on and arise from the water, and they are used chiefly for scouting and submarine-patrol work. Several of those ordered were turned over to the Government early in the summer, and one of them made a flight from Chicago to Akron, Ohio, a distance of 400 miles.

The use of parachutes as a means of escape from damaged airplanes, particularly in air fighting, has come to the fore. It is said that this method has been used on the Western Front, and experiments with parachutes are being conducted in England.

The Collier trophy for the most important development of 1916 was awarded to E. A. and L. B. Sperry early in the year for their drift set, which enables the aviator to set a true course for his objective regardless of the wind. No radically new and important instruments have been developed during 1917.

Several new automatic controlling devices have been invented, notably the Martin, which is an air-damped pendulum device with a movable vertical fin to insure proper action in side-slip, but the Sperry gyroscopic apparatus continues to be the only such mechanism in practical use.

The Airplane Industry.—The dominating industrial features of the year have been standardization and the development of mass production of aircraft. With the entry of the United States into the war, large numbers of training planes became immediately necessary. To supervise the production of these and other airplanes, an Aircraft Production Board was formed with Howard Coffin as chairman. This board adopted a policy of standardizing on a few designs and letting contracts for construction of these designs to numerous airplane manufacturers other than those whose designs were adopted, as well as to furniture makers and other factories with wood-working experience. This very much simplified and expedited the work, as all the drop forgings, for example, could be made in a single plant from a single set of dies, instead of each manufacturer's being obliged to have his own. Repairs and replacements on the field were also facilitated. A bill passed by Congress in September recognized the existence of the Production Board and gave it official standing. The funds for the purchase of machines and other expenses incidental to the organization of a great air service were made available when Congress appropriated $640,000,000 for army aeronautics, and $40,000,000 for the naval establishment, the bill becoming law on July 24.

The standardization of detail parts is being carried out by the Society of Automotive Engineers, at the instigation of and in coöperation with the Production Board. Already numerous specifications have been issued, making it possible to reduce very greatly the number of special sizes of turnbuckles, for example, which a manufacturer of such parts must keep in stock or be prepared to make to order. Specifications have also been issued for the physical properties of numerous materials and for such constructional details as the method of operation of control levers and the means of fastening the ends of wire stays.

The sudden need of immense numbers of machines has resulted, to a considerable extent, in the elimination of companies of small capital and small output and their replacement by large factories diverted from other lines. The use of furniture and wagon factories has already been mentioned. Many of the automobile companies are making complete engines or parts thereof, either from their own designs or from those of the Government (see *supra*). An analogous development, which was already manifest before the war, is the combination of two or more companies. Four of the largest airplane firms have been parties to such combinations, the Wright company having merged with the Martin, and the Burgess company having been taken over in large part by Curtiss. To secure a larger output of war machines, the Curtiss company has arranged to coöperate with the Willys-Overland Automobile Co., the officers of which have become officials of the Curtiss company.

The patent situation has been much cleared up by the formation of the Aircraft Manufacturers' Association, with a membership including nearly all the American airplane manufacturers, and the adoption by that Association of a cross-licensing agreement. This agreement, drawn up by the National Advisory Committee, provides for the payment of $200 for every airplane manufactured by a member of the association, such payment to be distributed to the Wright-Martin and Curtiss interests in a specified manner. Although there was considerable objection to this in certain quarters Attorney-General Gregory has held the agreement to be legal.

The American air-service personnel of course has been enormously increased. To provide for preliminary training, six ground schools were established at universities immediately after the declaration of war, and others were added later. More than 1,000 prospective aviators were enrolled in these schools by the end of June. For flying instruction, a number of fields have been, and more are being, established. The first of these new fields were located at Mt. Clemens, Mich., Rantoul, Ill., and Dayton, Ohio. (See also XI, *The Army.*)

Military Aeronautics.—There has been a marked increase in fighting in the air, a whole science of aerial strategy and tactics having gradually been developed. This has resulted in the rise to prominence of such masters of these tactics as Albert Ball and George Guynemer, each of whom had brought down more than 50 enemy aircraft before being himself shot down. A particularly interesting feature of aerial warfare is the growth of mass fighting, squadrons of machines flying in fixed formation and attacking and maneuvering according to a prearranged plan.

Airplanes have been used, also, for direct attack on the ground, fast machines flying low over the trenches and sweeping them with machine-gun fire. Their employment for artillery observation has continued, improved methods of communication with the ground having been invented, and, indeed, aircraft forms the only possible medium for keeping the artillery in touch with the movements of the infantry during an attack. Perhaps the greatest development, however, has been in aerial photography, where the use of special cameras, together with the increased technical skill of the operators, has made it possible to secure many thousand pictures showing the battle line in the utmost detail.

The German raids over England have continued with unabated vigor, the only change being in the substitution of Gotha bombing planes for Zeppelins in a large number of the raids. The military damage done has been comparatively slight, although 76 persons were killed in the raid of May 25. The invading forces have seldom escaped without some loss, and on Oct. 19 four or more Zeppelins were brought down while returning from a raid.

The Allied aviators, too, have been busy, their efforts being concentrated on the bombing of the German military and naval bases. English aviators have carried out several successful raids against the submarine base at Zeebrugge. On Aug. 11 bombing raids were carried far into German territory by 111 French aviators, who dropped 28,000 lb. of bombs. The Italians carried out numerous attacks in the Trieste sector, Caproni machines being chiefly employed. In one of these 261 machines took part.

The most striking feature of naval aeronautics has been the use of the torpedoplane. The British steamer *Gena* was sunk off Suffolk on May 1 by a torpedo launched from a German seaplane. This means of attack had previously been used by the British also. The Germans hold the torpedo between the floats and launch it in just the manner originally suggested by Adm. B. A. Fiske, U. S. N. Admiral Fiske has been engaged in further experiments with torpedoplanes during the year.

Records and Flights.—There was little flying of a sporting or competitive nature during the year, because of the war. Army flyers made a great many cross-country flights but no long tours, with the exception of a flight from Chicago to San Antonio, Tex., made by H. W. Blakely on Nov. 11-13. The longest trips of the year in America were made by women. On June 24-25 Katherine Stinson flew from Buffalo to Washington, with stops at Albany, New York and Philadelphia. At about the same time Ruth Law made a 2,500-mile circuit through the Middle West in the interests of the Liberty Loan. On Dec. 11 Miss Stinson made a non-stop flight from San Diego to San Francisco, a distance of 610 mi., in nine hours and 10 minutes. Later in the summer, interest was centered on the Italian machines which were tried out at Hampton, Va. During September a Caproni biplane, under the pilotage of Lieutenant Resnati, flew for six hours carrying 10 passengers, breaking the official record. A week later the same machine, in company with a Pomilio and an S. I. A., flew from Hampton to Washington, a distance of 120 miles, and on Oct. 22 the Caproni carried eight passengers from Hampton to Mineola, L. I., covering the 325 miles in a trifle over four hours.

On Sept. 19 Caleb Bragg, flying a Wright-Martin airplane, established a new American altitude record of 22,000 ft. Bragg had previously made a record (12,900 ft.) for altitude in a seaplane with two passengers. On this occasion he used a flying boat which, like the engine (a Hispano-Suiza), was of European design and American manufacture.

In Europe the most notable non-military performances were the cross-country flights of Captain Laureati. On Aug. 26 he flew from Turin to Naples and return, a distance of 920 miles, without a stop, and on Sept. 23 he made a non-stop flight from Turin to London. A Pomilio biplane was used. In May a regular, permanent, aerial mail service went into effect between Rome and Turin. In November, 1916, a new altitude record of 25,180 ft. was made by Guidi, flying a twin-engined Caudron biplane. No sensational sporting performances were reported from any other country than Italy.

Bibliography.—There has been a dearth of aeronautical literature during the year, a rigorous censorship in all the belligerent countries preventing the publication of anything except elementary textbooks. None of the great European laboratories have published their customary reports during the past three years. The second annual report of the National Advisory Committee for Aeronautics appeared just before the entrance of the United States into the war. It is devoted chiefly to a discussion of the state of the art of carburetion and a report of some tests on carburetors by Prof. Charles E. Lucke. Other reports of less extensive scope deal with mufflers for airplanes, the nomenclature of aeronautics, and the requirements of aeronautical instruments.

In the textbook class the most important publications were *Aeroplane Design* by F. S. Barnwell, *The Design of Aeroplanes* by A. W. Judge, *Aeronautical Engines* by F. J. Kean, and the *Course in Aerodynamics and Aeroplane Design* by Alexander Klemin and T. H. Huff, which has been appearing in serial form in *Aviation and Aeronautical Engineering* (*A. Y. B.*, 1916, p. 580). All of these books except the last are of English origin.

The only European machines of which descriptions have been available to American readers are the German ones. The German machines which have been captured by the French are described by M. Lagorgette in *L'Aérophile* each month with a praiseworthy thoroughness and attention to detail.

The only conspicuous contributions to propeller theory during the year were those which M. A. S. Riach embodied in a paper presented before the Aeronautical Society of Great Britain and in subsequent contributions to *Aeronautics* (English). By combining Froude's theory of propulsion with the Drzewiecki, or blade-element, theory of air-propeller design, Riach obtains more definite expressions for the flow of air about a propeller than has heretofore been possible.

Prof. E. B. Wilson has further developed his theory of the behavior of airplanes in gusts, and his latest conclusions are detailed in a paper presented to the American Philosophical Society and published as a part of its symposium on aeronautics, which also contains papers on the mechanical aspects of flight by Prof. W. F. Durand, on the dynamical aspects, by A. G. Webster, and several others on related subjects.

Important magazine articles in addition to the foregoing are: "Transverse Vibrations of a Propeller and its Shaft", by A. Fage (*Engineering*, July 20, 1917); "Six U. S. Army Wing Sections", by E. S. Gorrell and H. S. Martin (*Aviation and Aeronautical Engineering*, April 15, 1917); and "Stresses in Built-up Rectangular Bodies due to Rudder Forces", by A. Klemin and W. B. Ford (*ibid.*, March 1, 1917).

MECHANICAL ENGINEERING

CALVIN W. RICE AND LEON CAMMEN

From an engineering point of view, the year 1917 has been a very remarkable period in several respects. It has been a war year pure and simple, and everything has been sacrificed to the prime necessity of prosecuting the war.

This has led to some very unexpected results, especially in the field of research. At the beginning of the war, research, particularly that carried on by government and university laboratories was practically discontinued, but the last two years have seen a vigorous revival. The reasons are quite evident.

In the first place, the present war is a struggle of invention. Poison gases, lachrymatory shells, submarines and anti-submarine devices, Zeppelins, aeroplanes, battlefield illumination—all these are new developments obviously involving a vast amount of preliminary research; while other developments, not so generally known, affect no less profoundly the work of the engineer.

These developments are due mainly to the unprecedented scale on which present war operations are conducted. The art of making shells, for example, is not new, but the art of making them at the rate of 2,000,000 a day is not only distinctly new but involves many problems undreamed of by old-style arsenal engineers. The same applies to the production of rifle cartridges which increased from a few score millions a year to nearly that number of billions per day. The necessity of "speeding-up" the production of all war materials involves a vast amount of preliminary research in the development of methods for rapid handling by automatic machinery and for equally rapid inspection of the product. This, in its turn, necessitated a far deeper knowledge of the properties of materials, such as cartridge brass, various copper and aluminium alloys, semi-steel, structural steel and high-speed tool steels and the development of new material such as "synthetic" pig iron.

In the present war one of the most important instruments is the internal combustion engine without which the submarine, the Zeppelin, the motor truck, the aeroplane—all would have been absolutely impossible. The visit of the German submarine, *Deutschland*, to this country in the early part of the year and the several submarines captured during the year by the British and French give us a fair insight into the construction of the Diesel engines on the German U-boats, and show that, while certain refinements have been achieved, no spectacular progress has been made. On the other hand, in the field of aeronautical engineering, both the Allies and Germans have made advances of great importance. Although governments all over the world practically cut down their appropriations for experimental work in 1914, since then each nation has converted its shops into gigantic laboratories and has started experimentation on an undreamed-of scale. The U. S. Government, for example, backs its experiments in aeroplane-motor production by orders running into hundreds of millions of dollars.

A new incentive is now added to research activities. Peace on the battlefields will introduce a period of intensified commercial competition. All nations are making preparations, partly as a means of maintaining their commercial positions, and partly as a means of compensating for the financial sacrifices of the past four years. Engineering research as a basis of the commercial structure of the nation is the growing conception everywhere, and promises to help the industries and the nation to utilize their natural resources in a more systematic and economical manner.

One of the natural resources of which a wiser system of utilization is certainly dawning through the smoke of battle is that of human labor. The necessity for the most intensive production, a production on which the salvation of nations depends, at first resulted in increasingly long hours of labor, but the experience of the years of war has demonstrated that the volume of production is not increased by overworking labor, and that in order to maintain a maximum rate of output, hours and working conditions must be conducive to a high standard of living among the workers. From the 12- and 14-hour day of the first year, the munition producers gradually awoke to a realization of the value of an 8-hour day schedule of production, and of late the munition authorities in Britain (not labor) have raised the question of a 6-hour day, expecting from it a still greater output. It is difficult to believe that a 6-hour day will become standard in the industries, but experience in the production of munitions points to this as a desirable goal.

Thermodynamics.—In the past year work of considerable interest has been done in the field of thermodynamics. Lawford H. Fry, in a paper before the American Society of Mechanical Engineers, offered a general formula which, within a wide range of conditions, represents with all reasonable accuracy for practical work the processes of heat transfer between a gas and a metallic flue wall. This formula applies equally well to the loss of heat by a hot gas in a cooler flue, and to the gain of heat by a cool gas in a hotter flue. Nevertheless it must be recognized that the laws governing the loss of head by a fluid passing through the flue are still but imperfectly established and a formula is needed for loss of head in the case of heat transfer. The value of such a formula lies in the fact that beyond a certain point the loss of head, or in other words the amount of energy needed to drive the gas through the flue makes the gain in heat transfer unremunerative.

The entire subject of latent heat of steam has been reconsidered broadly by Frank B. Aspinall, who offers a new formula for the latent heat of steam. The same writer also proclaims certain basic laws concerning the thermodynamic phenomena present in steam generation, stating that the specific heat of water is constant under the conditions existing in a boiler making steam. Water can be present in steam in some form which is not a mechanical mixture. But the writer goes further and claims to have found from his experiments that steam has a dew-point like air. He also proclaims the basic law that, provided absolutely no water and absolutely no superheat are present, the pressure multiplied by the volume is always nearly, if not actually, equal to 400.

An interesting fact to which Mr. Aspinall calls attention is that as early as the 18th century James Watt distinguished between latent heat and heat latent (varying heat latent when varying mixtures of steam and water are present). Regnault failed to make this distinction, as did later investigators, thus causing the present confusion of terms and conceptions.

The investigation of the heat of vaporization of water at 100° C. and one atmosphere pressure in terms of the mean calorie, by T. Carlton-Sutton in a paper before the Royal Society of Great Britain is interesting in this connection. In this case the latent heat of vaporization was measured directly in terms of the mean calorie by using a steam calorimeter of high precision, and values were obtained which are expected to agree to within seven or eight units in the fifth figure.

In a paper before the French Academy of Sciences, E. Ariès discusses the question of the absolute value of entropy and energy, and comes to the conclusion that there is an initial stage common to all bodies and convenient to be used as a starting point for measuring their entropy and energy. For all bodies this state is defined by the following conditions: the body is at zero absolute temperature, is condensed to the state of saturation and is subject to no pressure. Any finite increase of volume to which it may be subjected at constant temperature results only in the body's being forced to emit at fixed pressures an inappreciable quantity of vapor, so that the entropy and energy of the body remain nil. The entropy and energy of a body can never go below the value which they have at the initial stage as defined, which means that both the entropy and energy of a body are quantities perfectly determined, usually positive, never negative, and are to be measured from this initial stage.

Steam Engineering.—Several years ago a definite tendency had set in to increase as much as possible the size of power-generating units. The great economies obtained from the 20,000- and 30,000-kw. turbo-generators have made the use of these immense units extremely attractive. For a while it appeared that the limit had been reached. While it was clear that further economy in cost per unit of power produced could be secured with the larger machinery, the making of units of more than, say, 40,000 kw. seemed a questionable policy. However, at the meeting of the National Association of Cotton Manufacturers in Boston in April, 1917, an announcement was made that a single unit of 70,000 kw. is under consideration and that still larger units are contemplated.

It requires enormous steaming capacity to feed such monsters. A few years ago the size of the Detroit plant boilers attracted much attention, but the type developed by Arthur D. Pratt and John A. Stevens in the last year will dwarf the Detroit boilers just as the 70,000-kw. unit does the 30,000-kw. turbines of three years ago. The new unit is a complete structure in itself, embodying boilers, superheaters, forced- and induced-draft fan equipment, uptakes, stack, coal bunkers, ash hoppers and economizers. A single unit delivers enough steam to operate a 45,000-kw. turbine, and even with one section down will supply a 30,000-kw. turbine. Its tremendous size is shown by the fact that it contains approximately 10¾ miles of 4-in. tubes in the water-heating surface alone. The total length of the 2-in. superheater tubes is over 5 miles, while the total length of the economizer tubes is nearly 10½ miles, making in all about 26 miles of tubes per unit.

A new type of steam generator, the Rector thermo-plug boiler, also deserves mention. In this boiler the flame is directed into the so-called thermo-plugs, semi-conical, high-silicon cast-iron pieces so arranged that the external projections extend into the heated gases above the water level with a decreasing section. Sufficient data have not been published to determine the efficiency of this new type. It appears, however, that it has a very high coefficient of safety, as water was pumped into the boiler while it was hot without causing an explosion.

The erosive effect of steam on turbine blades was studied experimentally by the Post-Graduate Department of the U. S. Naval Academy at Annapolis, where extruded brass, rolled brass, rolled cupro-nickel, Monel metal, Parsons metal and drop-forged steel were tested. Another investigation, with particular regard to Curtis-Rateau turbine blading, was carried out in South Africa at the works of the Rand Power Company. In addition to some of the materials enumerated above, aluminium bronze blades were tested and found satisfactory in low-temperature, but not in high-temperature stages. Coincidentally with this investigation a new type of inlet nozzle was developed by the engineers of the Rand Power Company.

The growing use of steam turbines on tankers and freighters led to increased attention being paid to reduction gears between turbine and propeller. The turbine operates most efficiently when rotating at a comparatively high rate, while a low speed of rotation is an essential condition of efficient operation of the propeller. Hence, a direct-driven propeller means a compromise in which both turbine and propeller operate at low efficiencies. An efficient reduction gear permits the operating of both elements under the best conditions. The Alquist reduction gear has been developed with this in view, especially for use on cargo ships, and in several installations made during the past year, as, for example, on the steamer *La Brea*, has proved to be reliable and efficient. In fact, although the average speed of *La Brea* is one-half knot greater than that of the reciprocating-engine-propelled *Los Angeles*, it has been found that the increase in fuel consumption of the latter over that of the turbine ship under operating conditions is

While steaming	17.9 per cent.
While steaming and in port	21.1 per cent.

Fuels.—During the year more than usual interest has been displayed in the question of fuels and fuel utilization. The deflection of a large volume of labor into the unproductive fields of military service, together with a cessation of immigration, caused an acute stringency in all industries where manual production is predominant. Coal mining belongs preëminently to this class. It was only natural under these conditions that the question of conserving coal and of utilizing other types of fuels should become of paramount interest. Some of these fuels are not new, but attempts are being made to utilize them on a larger scale or in new ways.

Much experimentation was done on burning blast-furnace gas under boilers. Herman C. Siebert, experimental engineer of the Duquesne Works of the Carnegie Steel Company, determined the aspirating characteristics and burner efficiencies of various types of burners, and also carried out some experiments with the mixing burner in which the explosive mixture was burned, leaving the nozzle at a velocity greater than the ignition velocity.

At the Water Street Station of the Toledo Railways and Light Company, a system for combined burning of coal and gas under boilers was installed and tests were made to determine the economy and range of application of this method of heat generation. It has been found that the cost of evaporation of, say, 1,000 lb. of water on a Stirling boiler with a heating surface of 6,680 sq. ft. and a superheating surface of 256 sq. ft., is 8 per cent. higher for the combination fuel than for coal alone, but with this system over 30 per cent. added capacity is secured per dollar of investment, which makes it very attractive for certain specific conditions. The efficiency of the boiler, furnace and grate was not materially improved by the use of the combination fuel.

The Department of Mines of the Dominion of Canada has issued the last of a series of reports on the value of peat fuel for production of power. It shows that under favorable conditions and circumstances, peat fuel can be employed economically for the production of power by steam, but does not offer any general solution of the problem of fuel shortage. In fact, it is safe to say that peat fuel for steam raising purposes cannot compete with good steam coal costing $5.00 or less per ton, though it may be used in other ways as, for example, in metallurgical work, where it might release a certain amount of coal for purposes of power generation.

Bagasse as a source of fuel has been investigated more thoroughly; and it has been found that the average Louisiana bagasse has a calorific value of about 8,300 B.t.u. per lb. of dry material, the net heating values varying widely according to the moisture content. Tests have been made on the various methods of burning this material; but many problems still remain unsolved.

Railroad Engineering.—The past year has been comparatively poor in large-scale developments. The impending gloom of war conditions made the American railroads chary of going into expensive experimentation. It could not, however, stop those developments which were created by the natural growth of the traffic handled on the lines. This increase in volume of traffic forced the railroads to resort to some interesting expedients. For example, the Southern Railway has materially increased the capacity of some of its locomotives without increasing the wheel load, and with a marked decrease in fuel consumption per ton-mile. This was done by the application of the Mogul running gear and machinery to Mikado locomotives, with the result that while a single Mikado locomotive could handle only 1,100 tons over a certain section of the line, the Duplex locomotive can handle 1,400 tons.

Another expedient in the same direction was resorted to by the Frisco Lines with economy of maintenance as the chief purpose. The Frisco Lines gave to the Baldwin Locomotive Works a single order covering ten Pacific-type, express, passenger service locomotives and thirty Santa Fé-type for heavy freight service. Advantage was taken of the fact that this large order was given at one time and many details have so been designed as to be interchangeable between the two types. This brings the ideal of a standardized locomotive a step nearer to its ultimate realization.

A highly promising experiment is embodied in an immense decapod locomotive recently built by the Pennsylvania Railroad. This locomotive is remarkable not only for its total weight of 366,500 lb., but still more for the fact that instead of operating at a maximum cut-off of approximately 90 per cent. the valves have been given a steam lap of two inches and a maximum cut-off with the reverse gear of 50 per cent. The purpose of the use of 50 per cent. cut-off is to eliminate the range of cut-offs within which the water rate of the cylinder is excessive, and to make possible an increase in the ratio of cylinder power to boiler capacity. The use of a 2-in. steam lap necessitated readjustments in means for admitting steam to the cylinder when the locomotive is standing, in order that it may be started from any position of the crankpins, but these difficulties have been overcome in a very satisfactory manner.

Superheat in locomotives of American railroads may be said to have come to stay. Gradually the various difficulties which were met with at first have been overcome. At first it was found very difficult to get engineers to use a cracked throttle in drifting down a long grade. An intercepting valve in the throttle was introduced with the expectation that it would be kept open when the main throttle was closed, but it did not prove to be satisfactory. Lately, however, an automatic drifting valve has been developed and appears to be giving entirely satisfactory results. The operation of slide-valve locomotives with high degree superheat also has been tried out and found to be very satisfactory, even on the fastest trains. It is now being applied on a decapod pusher engine.

For some time the New York Central Railroad has been testing locomotives equipped with Schmidt superheaters and an accurate record of water and fuel used and the number of cars moved has shown an actual saving of fuel on superheater locomotives. Other tests, on an Atlantic-type locomotive, were made at the testing plant of the Pennsylvania Railroad at Altoona.

Within the last few years much has been done in the way of more extensive introduction of feedwater preheating. The problem was to determine not only whether such practice would result in actual economy, but whether it could be attained through means entirely consistent with American locomotive practice. From reports presented during the past year at the Convention of the International Railroad Fuel Association in Chicago, it appears that this problem has been solved in an entirely satisfactory manner. The economy derived from preheating is greater the higher the initial temperature. In fact, it appears that the theoretical fuel saving from preheating follows the straight-line law. From an operating standpoint the feedwater heater is a prerequisite to the best performances and maximum locomotive efficiency. It permits a freer steaming boiler, increases the confidence of the fireman and leads to an increase in locomotive capacity. The effect of preheating on the quantity of coal consumed was found to be very marked. On the one hp.-per-hour basis, the quantity of coal saved through preheating was in no case less than 12.9 per cent., and in one instance the saving was as high as 28.1 per cent. It appears, therefore, that while there have been no startling developments during the year, a large amount of useful work has been done to make our railroads efficient and economical to a much greater degree than heretofore.

Practically the only development in the field of oil-driven cars was the construction of a Beach oil-electric car for the Nashville, Chattanooga & St. Louis Railway. The power plant on this car consists of a four-cycle 8-cylinder 150-hp. engine, burning a fixed gas derived from a gas generator which operates on kerosene oil. The engine is direct connected to a 100-kw. differential-compound-wound 250-volt direct-current generator. While it requires only 140 hp. to operate this car at 45 miles per hour, 340 hp. are necessary to accelerate it at the rate given in its specifications. As the engine generates only 150 hp., the 10 hp. in excess of what is necessary to drive the car at the standard speed are used to charge the battery which gives the extra power necessary during acceleration.

Internal Combustion Engineering.—There has been nothing startling in the way of invention in internal combustion engineering, but a large amount of useful work has been done in the determination of the fundamental laws affecting internal-combustion engines.

Thus ignition phenomena, still a somewhat mooted subject, have been studied in an interesting manner. In a paper before the Institution of Electrical Engineers (Great Britain), J. D. Morgan gave an account of his experiments as bearing on ignition of explosive gas mixtures by electric sparks. Prof. W. M. Thornton proclaimed some years ago that the igniting current is proportional to the number of molecules of combustible gas in a unit volume of the mixture. For alternating current especially, J. D. Morgan introduces the measurement of "incendivity" of the spark which may be determined from the number of volts and amperes, or the number of amperes and the inductance in the circuit prior to the formation of the spark. He further finds that the element of time is a factor of importance in ignition phenomena, as a single spark, which, when repeated slowly will not ignite the gas, will produce ignition after a more or less definite interval when repeated rapidly.

From this paper and some other work done lately there is growing evidence that it is necessary to distinguish between the energy which produces a spark and that quality of the spark which J. D. Morgan called "incendivity", the magnitude of one not being a measure of the other. Further, it seems that ignition depends on the ionization caused by the spark during the interval of sparking.

These conceptions open up what may possibly become a new field of research and promise to give us a clear understanding of the still uncertain ignition phenomena. In this connection the investigation carried out by Robert Wright on spark length in various gases and vapors becomes of considerable interest. The writer not only determined the relative spark length, but also established the relation between temperature of the gas and spark length for a given voltage. A similar attempt, however, to measure the spark length or substances in the liquid state has proved a failure so far.

For Diesel engines the spontaneous ignition temperature of the fuel plays the same part as the ignition by electrical spark in low-compression engines. Hitherto, liquid fuels and lubricating oils have been tested mainly for flash point and burning point. Harold Moore, in a paper before the Society of Chemical Industry, investigates the more important temperatures of spontaneous ignition, and besides giving the actual data for a number of fuels in oxygen and in air, establishes certain general principles, of which the most interesting, perhaps, is the statement that compounds containing simple molecules have higher ignition temperatures than similar compounds containing more complex molecules, this rule applying to all types of compounds. Also, ignition points of aromatic compounds are much higher than those of aliphatic compounds.

Bulb-engine ignition has been experimented extensively, with the result that a type of bulb has been developed which gives good results with a wide range of fuels. Likewise, complete data are now available concerning the so-called Vickers system of solid injection of fuels.

A novel type of engine known as the Hvid Diesel engine has been placed on the market. It is a high-compression engine, but differs from the conventional Diesel engine in that it has no air compressor. Its characteristic feature is a little steel cup with a few tiny holes. Some fuel is admitted to this cup, and when the air in the cylinder has been compressed to about 450 lb. per sq. in., it enters through the holes in the bottom of the cup and ignites the fuel. The combustion which takes place gives rise to a pressure within the cup far in excess of the compression pressure in the cylinder, and the oil lying at the bottom of the cup is forced through the holes into the highly heated air in the cylinder, where it ignites spontaneously. The pressure which arises from combustion forces the piston forward on the working or expansion stroke. The Hvid engine has a four-stroke cycle.

An account of the year's progress in this field would not be complete without the mention of the internal-combustion turbine. *Power* (Dec. 5, 1916) contains a description of such an apparatus having a capacity of 100 hp., which is reported to have made a number of runs with an efficiency estimated roughly at about 20 per cent. No further data as to this machine are available.

M. Camillerapp in a French periodical describes the application of the oscillograph to the study of explosion engines. The Blondel oscillograph has rendered such important service in the study of electric motors that its application to internal combustion engines may be expected to give extremely valuable results.

Automobiles.—The achievement of which the American industry is probably most proud is the design in a very short time of the standardized Liberty motor truck. While no new inventions have been incorporated in this design, very nearly every part has been redesigned so as to meet the requirements of rapid production, simplicity and ruggedness. The truck is, however, a good deal heavier than is absolutely necessary, a fact which, however favorable to its use as a military unit, will probably militate against its unaltered adoption for commercial purposes.

Generally, both the pleasure car and the commercial car have arrived at the state where no radical developments can be looked for. This does not mean, of course, that the construction is perfect. In fact, in the last couple of years a growing increase of the percentage of heavier elements in the fuel has brought before the designer several difficult problems, chiefly involving the question of starting on a cold winter's day. This problem is gradually being solved by intensification of engine temperature control or by various means of preheating the fuel. Some automobiles use what is known as a "hot spot" in the engine: a section of the intake manifold maintained at such a high temperature that when the incoming mixture strikes it this mixture is instantly vaporized. The more usual system is to maintain the radiator water at an even temperature. The use of the thermostat in the water line is familiar. Last year the Hudson Company introduced shutters in front of the radiator, so as to control the flow of air through the radiator. The operation of the shutters was manual, calling for considerable skill on the part of the driver. This year the Columbia Company introduced a system of thermostatically operated shutters; and finally there was proposed a system of double water circulation through the engine jacket and cooler, and through the radiator and around the cooler, the latter circulation controlled by a thermostat valve in the jacket line.

The growing interest in problems of temperature control has led to an extensive investigation on heat balance in automobile engines by Prof. Walter T. Fishleigh of the University of Michigan.

It now appears that if any specification is legally established it will probably not be based on the gravity test, which, as recent investigations show, may be entirely misleading, and which has been discarded by Director Manning of the Bureau of Mines.

It is quite likely that the property on which specifications will be based will be either volatility or range of boiling points, the latter having now been established definitely as having an important bearing on the range of application of gasoline in prime movers.

The demand for explosives created an enormous increase in the production of benzol in Great Britain; and the Midland Institute of Mining Engineers in Birmingham, England, has already considered the question as to what use can be made of this industry after the war. In discussion it was brought out that standard benzol, consisting of 96 per cent. benzine and 4 per cent. toluol, is a fuel which can be used very conveniently.

Steam Cars.—The development of the gasoline engine has practically displaced the steam engine for motor car use. It appears now that there may be a return to steam as a propellant for automobiles. The car shown at the automobile shows in New York and Chicago in 1917 and invented by Abner Doble has a steam boiler with an air-cooled radiator-type condenser and a uniflow engine with an ingenious system of starting and regulation.

Of accessories, probably the most interesting is the vacuum brake which is operated by suction in the intake manifold. (See also XX, *Automobiles.*)

Aeronautics.—The many and great problems which faced the aeronautical engineer at the beginning of the war have largely been solved during the last three years. The plane has been made so safe that officers of the U. S. Army in the year preceding the declaration of war had flown nearly 400,000 miles without a single fatal accident, probably a better record from the point of view of safety than in automobiling.

The engine also has attained a comparatively high state of perfection. With an average weight of slightly over 2 lb. per hp. and operating under the most strenuous conditions that an engine can operate, aeronautical engines have shown a useful life up to 200 hours, equivalent to a distance of about 20,000 miles, or, really a better showing than racing-car engines, with which aeroplane engines may be compared.

There are still some problems which remain imperfectly solved. Spark plugs are still apt to give trouble, and may be considered as the weakest part of the entire power plant. There is also a growing conviction that the water-cooling system is not what it should be, the water getting too cold with the engine shut off at high altitudes.

Aeronautical engineers are apparently in doubt as to how the radiator problem should be handled. The head-on radiator gives excellent cooling, but creates an excessive amount of head resistance and thereby is apt to cause an excessive consumption of power. German engineers have incorporated the radiators into the streamline of the plane by placing them in the sides of the fuselage. In this way the head resistance is lessened, but also the cooling effect of the radiator, so that a larger radiator becomes necessary. There is, as yet, no established practice in this connection.

The United States, with its laboratory at the Bureau of Standards, is now leading the world in the matter of testing aeroplane engines. This laboratory has been so arranged that temperature and pressure conditions, under which the engine is being tested, may be made to vary as they would if the engine were on an aeroplane rising at a given rate of speed. Thus the engine may start working at sea-level pressure and the temperature of a hot summer's day, and in about 30 to 40 minutes these conditions will have changed until a pressure equivalent to a 20,000 or 25,000 ft. elevation is established and a temperature of perhaps 5° below zero F. This arrangement gives unexcelled opportunities for studying the operation of aeroplane engines under conditions otherwise impossible. (See also XX, *Aeronautics.*)

Air-Drying.—The Gayley process of air-drying for blast furnaces has shown the great advantages that could be derived from supplying dry air to the stoves. Unfortunately, however, both the original Gayley process and its numerous modifications, while undoubtedly efficient, proved to be quite high in first cost and cost of operation per unit of air, which prevented their more extensive application. Several attempts, hitherto unsuccessful, have been made to utilize dry calcium chloride for air drying, but all such attempts have failed because of the large expenditure of heat in the regeneration of the calcium chloride. At the same time an increased demand for means of drying gases is made by the industries handling gases at very low temperatures where the slightest amount of moisture present proves to be extremely inconvenient because of its clogging the valves.

A two-stage process for drying and purifying air was offered by W. J. Baldwin in a paper before the American Society of Mechanical Engineers. This process consists of the use of a cold spray in the first stage, after which moisture together with particles of dust, etc., are separated from the air by centrifugal action. In a paper before the Engineers' Society of Western Pennsylvania Leon Cammen suggested another method based on the fact that the dehydrating properties of calcium chloride brine vary simultaneously with temperature and concentration and are at a maximum when the concentration of the brine is near its saturation point and the temperature around 16° F. The process is a single-stage one and involves passing the air through a tower in countercurrent to the brine. The brine then goes through a heat exchanger to an evaporator, then to a refrigerator and back to the tower.

Hydraulics.—William Gatewood, in a paper before the Society of Naval Architects and Marine Engineers, made an attempt to correlate the laws of fluid motion having a bearing on the subject of frictional resistance and formulated a theory of which there are two main elements: (1) frictional resistance per unit of surface varies as the square of the equivalent rubbing velocity determined by considering the flow to be laminar; (2) friction between adjacent laminae of the fluid varies as the rate of change of velocity occurring at their boundary.

In experiments at the University of Texas the equation was determined establishing the relation between friction and velocity of flow for clean iron pipes ranging in size from ½ to 3 in., when the water has a temperature of about 68° F. and flows at velocities up to 3 ft. per second. In the same experiments the friction in an elbow and the effect on friction in pipes of galvanizing and incrustations was determined.

At Cornell University the effect of sudden enlargement upon the flow of water in pipes was extensively investigated, and coincidentally the action of the Pitot tube under disturbed conditions of flow was studied with a view to determining the conditions under which the tube may be relied upon to give accurate indications.

The effect of mouthpieces on the flow of water through a submerged short pipe was likewise studied experimentally at the Engineering Station connected with the University of Illinois.

The most unusual water-power installation in this country was built by the labor of convicts at the State Prison, Folsom, Cal., the turbines being so designed as to handle hydraulic heads of but 8 ft., a record for low-head development in this country.

Machine Shop.—At the Rose Polytechnic Institute, Terre Haute, Ind., Prof. H. A. Thomas carried on a series of tests on the lateral bending resistance of metal bolts and lag screws and gave working equations for the design of these elements of machine construction. At the Newport News Shipbuilding and Drydock Co. tests were run to check the cost of operation of gas heating as against oil-furnace heating of rivets. The surprising fact was discovered that gas-heated rivets stay hot longer than those heated in the oil furnace, this being probably due to the fact that the gas-heated rivets are heated evenly all the way through.

As was pointed out by Col. R. E. B. Crompton before the British Institution of Automobile Engineers, there was no satisfactory system in use for gauge-making in England when the war commenced, and if gauges had been designed for production in quantities, England would have had her expeditionary forces in France in fighting trim many months before this actually happened. When the demand for interchangeable screw work for shells became very pressing and a large supply of accurately-made gauges were required, it was found that many of the gauges were very difficult to make.

This problem has formed the subject of serious consideration in this country also. Just to give an idea of the great importance of gauges for the production of munitions it may be sufficient to quote from a paper by Frank O. Wells before the American Society of Mechanical Engineers the fact that each 1,000 rifles made require 4,800 gauges.

Chipping defects from steel billets when done on a large scale is a costly practice, and unless properly handled may become excessively expensive. Hence, chipping hammers have been investigated thoroughly, a new type of nozzle for air hammers and a standard half-round chisel developed, as well as methods for heat-treating chisels. The conditions which created these methods of handling shop problems will probably not survive the abnormal war demands, but shopmen have learned their lesson and will, no doubt, continue to apply it wherever possible, even after the return to normal conditions.

Patents.—In beginning the execution of its vast war program the Government of the United States has been faced by the important problem of using the inventions protected by patents and owned by the various manufacturing concerns of the country. From the beginning the Government wisely decided to manufacture all its machinery of war, as far as possible, in series of standard types. It was only in this manner that the American system of mass production could fully be utilized. When, however, other standard types came to be worked out, it was found that in many cases no single unit on the market could fully answer the special requirements presented by war equipment. New types had to be developed immediately, such as the Liberty aeroplane engine, the Liberty motor truck, and the standard ship. It was further found that in the development of these standard types it was necessary to make use of many special devices legally controlled by various manufacturing companies.

It was realized from the beginning that unless the Government was assisted by the companies owning such patents, it might be involved in a complicated system of litigation, either now or after the war. It has developed that practically all companies have most liberally opened to Government engineers all their sources of information, not only giving them the right to use, without any compensation whatever, their patented devices, but also what is much more important, freely revealing to them the innermost secrets of design and manufacturing processes—secrets which have hitherto been guarded by every plant with the greatest jealousy.

In the month immediately following the declaration of war it appeared that the aeroplane patent situation might tie up the entire industry in litigation. This situation has been met by the National Advisory Committee on Aeronautics by inducing the manufacturers to enter into a cross-licensing agreement by virtue of which the Wright-Martin Company and the Curtiss Aeroplane and Motor Corporation are each to be paid $2,000,000 for the use of their patents.

The Commissioner of Patents was given the right to defer to the end of the war the issue of patents containing information which might be of use to the enemy.

Bureau of Standards.—A large amount of interesting work of a scientific and engineering nature has been done by the Bureau of Standards during the year. The work of the Bureau for the second part of the year was largely of a confidential nature and covered various subjects connected with the prosecution of the war, but the work in the first part of the year, as shown by the last report of the Director of the Bureau, covers a wide range of subjects not of a confidential character. Only some instances of this work will be mentioned to show its scope and nature.

In preparing for the testing of munition gauges in large quantities it became necessary for the Bureau to design a number of special instruments. Notable among them is the optical protractor. One was designed so as to make it possible to measure the sides of the screw thread within three minutes of the arc under good optical conditions. Similarly, methods have been developed for increasing the precision of measurement of leather-measuring machines. A novel type of balance characterized by a high sensibility and yet simple and inexpensive to manufacture has been developed.

Among other things, an improved mercury vapor pump has been developed which will give a high vacuum when used in conjunction with any pump which will evacuate to a primary pressure of 4 cm. or less. With this pump pressures much lower than 0.0001 mm. may quickly be reached.

In the field of refrigerating engineering, by means of a special calorimeter developed in the Bureau, the specific heat of liquid ammonia has been determined throughout the temperature interval —45° C. to + 45° C. under saturation conditions, and an expression found for this specific heat. The latent heat of vaporization of ammonia has also been determined experimentally and expressed in a general equation, as well as the latent heat of pressure variation of liquid ammonia.

Fire tests of building columns and reinforced concrete columns have been carried out.

A vast amount of interesting work has been carried out in the field of electrical engineering, optics, and chemistry.

In metallurgy the preliminary investigations were undertaken on the behavior of metals when very quickly cooled from high temperatures, with the view to securing data having a bearing on gun erosion and allied phenomena.

Data on the failure of brasses and bronzes and corrosion of these materials and impurities have been published.

A feature of the work of the metallurgical section, not, however, exclusive of it, is the growing coöperation with technical societies and industries in the prosecution of its investigational work. This section is working in close collaboration with the American Institute of Metals, the American Society for Testing Materials, the Navy Department, and even private companies, such as the Pennsylvania Railroad, and the Aluminum Company of America. In this way the Bureau is opening a wide road for maximum utility to the national industry.

Another feature of the work of the Bureau which deserves attention is the presentation of papers on the work of the Bureau by members of its staff before the various national and even international engineering societies. In fact, several members of the staff are serving actively as officers or as members of the committees of these technical and scientific societies to the undoubted benefit of both sides.

An important investigation has recently been inaugurated in coöperation with the Research Committee of the American Society of Mechanical Engineers on the cutting action of machine tools. It is intended to study exhaustively chip formation, as well as the power consumed in the cutting of metals. This is an investigation of exceeding scope and will require considerable time before any definite results can be obtained. At present there is practically no literature on the subject which might be used as a guide in outlining such an investigation and it is proposed to study different types of tools, different angles of cutting tools, and different grades of steel for use on these tools.

A similar investigation on the physical properties of earths has been undertaken in coöperation with a committee appointed by the American Society of Civil Engineers. (See also XX, *Automobiles*.)

SHIPBUILDING AND MARINE ENGINEERING

Daniel H. Cox

During the present year the conditions in the shipbuilding industry have been unprecedented due to the reduction in shipping caused by the submarine activity, and the demands made upon shipping generally by the needs of the warring nations.

Previous to the entry of the United States into the war the effect of the loss of tonnage caused an enormous increase in values of existing ships, which, together with the increase in price of material and cost of labor, was followed by a subsequent increase in building cost. Notwithstanding the enormous prices asked by vessel owners for their ships, there was great activity in the transference of ownership, and in most cases the prices were entirely at variance with the actual value of the ships themselves. The same vessel would often be re-transferred many times within a short interval, and each time at a largely increased price.

American shipowners, not fully appreciating the world's necessity of tonnage, were reluctant to place orders for new ships in American shipyards, at the high prices demanded, except in a few instances where an actual necessity required such action. Foreign shipowners, notably the Norwegian interests, being better acquainted with the situation, came actively into the market, and placed a large amount of tonnage in American shipyards, at prices considered out of reason by American capital.

As the submarine activities continued to increase, and the imperative necessity for building all the ships that could be constructed in shipyards of the world became apparent, British capital came into the market and in a short period of time practically every shipyard of the United States was filled up with orders, largely for British interests, though partly for French, Norwegian and other accounts, these orders covering programs in most instances extending into 1918 and some into 1919.

After the entrance of the United States into the war, this Government, through its agents, the United States Shipping Board and the Emergency Fleet Corporation, undertook to develop to the utmost the shipbuilding industry in this country, and took steps of the most drastic character to increase the production in every possible manner.

Due to the high price of steel, and the long time required for securing steel deliveries, and due to the fact that the production of the mills for a long period in advance would be fully occupied in filling the orders given through the shipyards for the building programme already undertaken, the possibilities of additional tonnage in the shape of wooden and composite ships were developed in the first instance, and a large number of contracts for vessels of these types were placed, a uniform design having been adopted of a steam-propelled ship of as large a size as it was believed could satisfactorily be constructed of wood.

After mature deliberation it was determined that the best interests, not only of the United States but of the allied nations, would be secured by an actual control of shipbuilding and ship operation in this country, with the result that all vessels of over 2,500 tons deadweight actually under construction or contracts for such vessels executed by the shipyards were taken over by the Government, the yards were prohibited from taking additional orders except for the Government, and all vessels of American ownership actually in service were requisitioned by and operated under the direction of the Government, which in all instances handled these matters through the United States Shipping Board in the case of the vessels already completed, and through the Emergency Fleet Corporation in the case of vessels under construction.

All vessels of German ownership interned within the limits of the United States and its possessions were by order of the President seized by the representatives of the Government on May 12, and these vessels, after having been overhauled and repaired, have been put into service either as cargo vessels, animal vessels or troop ships, or in some service for which they were especially fitted. This action placed at the disposal of the United States a total of 105 vessels, with an aggregate of 660,000 gross tons.

In order to speed up the work of the construction of vessels every effort was made through strong committees covering every trade entering into shipbuilding, to increase the production of the necessary materials, and to give precedence to all industries essential to the building of ships.

A comprehensive building-programme was developed by the Emergency Fleet Corporation, including the establishment of a large number of additional shipyards, to which, as well as to the already established shipyards, contracts for new construction were awarded as rapidly as possible for ships of such types as had been determined to be most useful, and which could be completed with the greatest rapidity.

The following statement, which appeared in the public press regarding the programme of the Emergency Fleet Corporation, is interesting:

> The programme which the Emergency Fleet Corporation of the United States Shipping Board is endeavoring to push to completion to defeat the German submarine menace shows that since the Corporation was organized contracts have been let for 884 new vessels, aggregating 4,724,300 deadweight tons; that 426 vessels of 3,029,508 tons, building on the ways, were requisitioned to hasten construction, and that contracts for 99 other vessels of 610,000 tons are pending.
>
> This programme presents a grand total of 1,409 vessels of all types, aggregating 8,363,808 deadweight tons. Of the requisitioned vessels included in this schedule, 33 of 257,575 tons have been completed and released. The total deadweight tonnage given represents approximately 6,000,000.
>
> The Emergency Fleet Corporation with the patriotic coöperation of the shipbuilders and of organized labor, expects to place all of the vessels in the programme on the seas before the end of next year and thus meet the expressed hope of Premier Lloyd George, made in a recent address, that the accomplishment of that feat undoubtedly would overcome the best efforts of the submarine. It is entirely probable also that contracts for at least 500,000 tons of ships not included in the schedule given will be let.
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> The figures show that there are under contract no less than 278 vessels of 7,500 tons or more, classified as cargo steamers, of which 70 are designed especially for transports. Of the cargo vessels requisitioned 176 also are of 7,500 tons or over.

One particularly interesting feature of this development of shipbuilding has been the expansion of the process of "fabrication" to ship construction. In explanation of this term, it may be said that fabrication in this sense means carrying on the work of shipbuilding as far as the hull is concerned at places other than the shipyard proper, so as to bring into play the services of shops already in existence in the country, and their organizations, which usually would be occupied in structural steel activities, and thus increase the number of men and the number of shops and tools of all kinds occupied in shipbuilding, without the great expense and delay necessary to assemble and create such agencies in the shipyards themselves. Through the Emergency Fleet Corporation three immense fabricating shipyards were authorized: the American International Shipbuilding Corporation at Bristol, Pa.; the Submarine Boat Corporation at Newark, N. J.; and a comprehensive building schedule entered into with each one of these companies for a large number of ships, which it is anticipated will be completed with unusual dispatch in view of the pressing need for them.

The vessels to be built in this manner are of different types, but each yard is building only vessels of the same dimensions. These fabricating yards, as explained, depend largely on the fabricating shops throughout the country for the work on their steel hulls, the shipyards themselves performing more nearly the functions of erecting shops, although they also have fabricating facilities of their own to take care of the more intricate portions of hull construction.

The machinery, boilers, auxiliary and equipment contracts for these various fabricating yards are in each instance the subject of sub-contracts with large engineering concerns or other agencies capable of delivering the equipment in question.

Acting upon the dreadful experiences of those in vessels attacked by submarines, all possible means of protecting from submarine attack vessels passing through the danger zone have been given the most careful attention. As far as protecting the vessels themselves is concerned, the most obvious steps were to provide defensive armament, increase watertight subdivisions, and reduce the visibility of the vessels by dispensing with unnecessary top hamper, and also by adopting the principle of camouflage in the painting of the ships; a long investigation and comparison of experiences having established a more or less uniform method of procedure in these matters.

The Naval establishment, being concerned primarily with the duty of protecting merchant ships and transports from submarine attacks, concentrated its activities on such types of vessels as appeared most suitable for this purpose.

In the first instance, when the size of submarines and the offensive armament which they carried was of such a character that small, high-speed vessels with light guns on board were found effective, large numbers of such vessels, known as "chasers", were ordered to be built with great dispatch, and placed in immediate service. As the size of the submarines increased, with consequent effect upon the battery which they carried, the necessity for larger vessels to operate against them became apparent, and an immense building programme of high-speed destroyers was entered into, which programme is now well under way, and, it is hoped, will prove very effective in warfare.

Many other devices for detecting the presence of submarines when submerged, destroying them by high explosives when under water, and in every way hampering their activities, have been developed by the allied nations, and with great success.

The desire for immediate production of a maximum tonnage has naturally resulted in selecting methods ensuring the greatest results in the shortest possible time, and there has been no great attempt to develop new types of machinery. For the most part, the machinery installations in the new vessels of large power are geared turbines, although a large number of reciprocating engine installations are being made, and in the case of wooden ships all the machinery is of the reciprocating type.

As regards boilers, the maximum output of the boiler makers of all reliable types has been required, and owing to the rapidity of construction of the boilers of the water-tube type a preponderance of this type has been ordered in order to secure the necessary number of boilers to complete the building programme.

Under existing conditions the development of the Diesel engine and other new types of propulsion in this country have not received much attention, although all such matters are being given careful consideration.

One of the controlling features of the shipbuilding programme and one which has done more than any other to hamper the delivery of tonnage has been the labor situation. Not only has there been an enormous shortage of the proper labor, which shortage still exists, but there have been numerous strikes throughout the country, with consequent delays in shipbuilding.

The labor situation is being attacked vigorously; agencies have been created for the training of labor; and means are being devised for the adjustment of labor disputes of every character, so that, it is hoped, in the near future this situation will greatly be improved. (See also XV, *Labor and Labor Legislation.*)

XXI. MATHEMATICS AND ASTRONOMY

MATHEMATICS

G. A. MILLER

An American Mathematical Prize.—Prof. L. L. Conant, whose death was noted in the YEAR BOOK for 1916 (p. 587), bequeathed to the American Mathematical Society, of which he was a member, the sum of $10,000, the interest on which is to be offered once in five years as a prize for original work in pure mathematics. This bequest becomes operative, according to the terms of the will, in the event of the decease of the wife of the testator. The secretary of the American Mathematical Society announced this bequest in its *Bulletin* (1917, p. 300) as follows:

> This generous gift, a noble monument to the donor, should do much for the promotion of high mathematical aims in this country. For years the Society has consistently pursued these aims with a success far outrunning what might have been expected from its modest financial resources. With greater means in the way of general or special funds it could accomplish still more.

American mathematicians contributed very little to the advancement of pure mathematics before the beginning of the last half-century and thus far their contributions have not been stimulated by prizes offered by native scientific bodies. A few Americans have competed for prizes offered for research in pure mathematics by European academies, and two such prizes have been won by them within the last two decades (*Bull. Am. Math. Soc.*, vii, 191; xvi, 267). A permanent mathematical prize administered by the Society in which American research in mathematics has centered ever since it has shown united native strength will doubtless be a stimulating factor of much consequence in the further development of this subject. The fact that important new results in pure mathematics appeal to only a small group of people makes it the more desirable that artificial stimulus be provided for work of high order, especially since the subject touches the root of much of the highest scientific endeavor, and represents a scientific field in which America is still relatively weak notwithstanding her vigorous recent advances and bright outlook.

A Project for a Mathematical Dictionary.—Already in 1869 H. Hankel was led to compare mathematics with the Tower of Babel, in view of the fact that mathematicians had great difficulty in understanding each other on account of their numerous special terms with continually widening meanings. This situation has grown much worse during the last half-century in spite of various mitigating movements. The most important of these movements was inaugurated in September, 1894, when three eminent German mathematicians, F. Klein, F. Meyer, and H. Weber, met on a journey in the Harz Mountains and began to plan a work which was to appear in the form of a large mathematical dictionary but which actually appeared in the form of an encyclopedia, the subject matter, not the alphabetical order of the terms, constituting the basis of arrangement. The same general plan of arrangement was adopted by the French mathematicians, who began in 1904 to issue a somewhat more comprehensive mathematical encyclopedia.

During the meeting of the Mathematical Association of America held at Cleveland, Ohio, early in September, 1917, the president of the Association was authorized to appoint a committee to consider the advisability of inaugurating at this time the publication of a mathematical dictionary. In accordance with this authorization the following committee was appointed: E. R. Hedrick (Missouri), chairman, R. C. Archibald (Brown), H. L. Rietz (Illinois), H. E. Slaught (Chicago), and D. E. Smith (Columbia).

It is a singular fact that while the last half-century has been rich in the inauguration of new mathematical aids in the form of clubs, societies, and the classification of new results according to schedules adopted at international conferences, it has not carried forward the older scheme of aiding the mathematical student by means of a good dictionary. The only mathematical dictionary which has appeared in the United States is the *Mathematical Dictionary and Cyclopedia of Mathematical Science*, edited by Charles Davies and W. G. Peck, and published in 1855. As this work was issued before American mathematicians were keeping abreast with the advances made in Europe, the world's mathematical center for centuries, it reflects a status of mathematical knowledge which is too old to be of much interest to the modern student. The mathematical dictionaries by Charles Hutton and Peter Barlow were published more than a century ago, and Continental Europe has produced no modern work along this line.

Mathematical Journals.—There has been a marked decrease in mathematical periodical literature since the beginning of the European war, which had its center from the beginning near the mathematical center of the world. In view of the present international situation it may be of interest to note that a few months before the war began, an eminent German mathematician, E. Landau (Göttingen), stated publicly that the Italian journal entitled *Rendiconti del Circolo Matematico di Palermo* was the best mathematical journal of the world. Members of the large society under whose auspices this journal was being published were informed during the summer of 1917 that no more numbers would be issued until the close of the war.

In view of the general retrenchment in mathematical publications, it is noteworthy that arrangements were recently completed for the enlargement of an American mathematical periodical by 100 pages. This happy condition is due to the support which the new but vigorous Mathematical Association of America has given to the *Annals of Mathematics*, whereby the latter has been enabled to offer space for the publication of longer expository and historical articles. The fact that this Association could render such important service during the second year of its life augurs well for its future usefulness. American mathematical activity has been seriously hampered in more than one direction by the lack of sufficient facilities for publication.

The Spanish Mathematical Society inaugurated in 1917 a publication under the title *Suplemento a la Revista de la Sociedad Matemática Española.* The first three numbers, prepared by Zoel Garcia de Galdeano, President of the Society, were devoted to an exposition of various broad fields of mathematics under the title "*Exposición sumaria de la matemática según un nuevo método.*" The Spanish Mathematical Society was organized at Madrid in 1911 under the presidency of José Echegaray, mathematician, poet, and dramatist, whose death was reported in the YEAR BOOK for 1916 (p. 587). The activities of this society should be of unusual interest in view of its influence on mathematics in the Spanish-speaking countries of America.

Research Committees.—The following members of the Mathematical Committee of the National Research Council were announced: E. H. Moore (Chicago), chairman, G. D. Birkhoff (Harvard), E. W. Brown (Yale), F. R. Moulton (Chicago), E. B. Wilson (Massachusetts Institute), and R. S. Woodward (Carnegie Institution). This committee was organized with a view to rendering aid to the Government by the solution of problems of a mathematical nature. The Committee of One Hundred on Scientific Research of the American Association for the Advancement of Science appointed the following mathematical subcommittee: G. A. Miller (Illinois), chairman, Edward Kasner (Columbia), E. H. Moore (Chicago), W. F.

Osgood (Harvard), and E. B. Van Vleck (Wisconsin).

Personal Notes.—L. E. Dickson (Chicago) was elected President of the American Mathematical Society. Edward Kasner (Columbia) was elected a member of the National Academy of Sciences. Florian Cajori (Colorado) was elected president of the Mathematical Association of America. P. Painlevé (Paris) was appointed Premier of France. J. G. Darboux (Paris) died on Feb. 23. G. Veronese (Padua) died on July 17.

ASTRONOMY

R. S. Dugan

Astronomy in War.—A considerable number of American astronomers have been able to find ways of being directly useful in the national service. G. E. Hale was called upon by the National Academy of Sciences in April, 1916, to assist in the organization of a National Research Council; this task, and the work of the Council of National Defense since its organization, have occupied most of his time since that date. Bauer is at the head of a committee of astronomers formed to make suggestions to the U. S. Shipping Board for instrumental and observational improvements. Navigation is being taught by astronomers to full classes, both in special schools and in many of the colleges. The astronomical aids to night flying are receiving much attention in the aeronautical schools.

Personal and Societies.—The Janssen prize of the Astronomical Society of France was awarded to G. E. Hale for his important researches in solar physics; the gold medal of the Royal Astronomical Society to W. S. Adams for his investigations in stellar spectroscopy, including the determination of absolute magnitudes; and the Bruce gold medal to E. E. Barnard.

The American Astronomical Society held its twenty-first meeting on Aug. 29 to Sept. 1 at the Dudley Observatory, Albany, N. Y. A visit was paid to the Vassar College Observatory at Poughkeepsie.

The long lists of observations by members of the American Association of Variable Star Observers published monthly in *Popular Astronomy* continue to be a fine contribution to astronomical research. One of the members of the Association has offered a gold medal to the member who first discovers a nova. At the meeting of the Association on Nov. 20, 1916, at the Harvard College Observatory, 19 members estimated the brightness of the variable SS Cygni with the 12-in. Coudé, an observation unique in astronomical history. The observations showed an average residual from the mean of 0.14 magnitude.

Observatories and Instruments.—The Mt. Wilson 100-in. mirror is ground and silvered, and in its mounting has a clear aperture of 101 in. The thickness at the edge is 12.75 in. The mirror weighs 9,000 lb. The depth of the curve is about 1.25 in. at the center. A great deal of slow, careful grinding was done in changing the nearest spherical surface to a paraboloid, the greatest difference (at the center) between the two curves being almost exactly 0.001 in. The operation of the telescope and dome will require 35 electric motors. The chief advantage of this great telescope will be its enormous light-gathering power. The stars will appear some 30,000 times as bright as they do to the naked eye, and present lines of research can be extended to very faint stars.

The new observatory at Victoria, B. C., has received the name of the Dominion Astrophysical Observatory. The 72-in. mirror, which will stand second in size to the Mt. Wilson 100-in., has not yet been received. The buildings, dome and mounting are all completed, and operations will be started as soon as the mirror arrives. The new observatory of the University of Arizona is to be called the Steward Observatory. It is intended to devote the funds primarily to the purchase of a reflector of about 37 in. aperture. The late Percival Lowell made provision in his will to have the work of the Lowell Observatory at Flagstaff, Arizona, continued. V. M. Slipher has been appointed director.

Perrine announces that a site 40

km. from Cordoba, Argentina, has been selected for a 60-in. reflector.

The Sun.—The circumstances of the solar eclipses during 1917 made them comparatively uninteresting. The peculiar circumstances of the annular eclipse of the sun on Dec. 13, however, are worthy of remark. The central line passed within four miles of the South Pole, so that the eclipse was theoretically visible in all longitudes and at all local times. If there is a plateau at the South Pole 9,000 ft. high, then the central line passed directly through the Pole. The total solar eclipse of June 8, 1918, the path of totality of which will run across North America from Oregon to Florida, will probably be well observed. In Colorado the total phase will last about 1½ minutes. An eclipse repeats itself under very similar circumstances after an interval of 18 years 11⅓ days; the so-called Saros. The eclipse of 1918 will be a return of the one of May 28, 1900, which was well observed in America.

In the YEAR BOOK for 1915 (p. 586) the recent detection of the magnetic polarity of sun spots was reviewed. With new evidence, furnished by the advancing cycle, the observers at Mt. Wilson are of the opinion that the visible vortex structure represents actual motion, analogous to terrestrial tornadoes, rather than lines of force of the powerful magnetic fields in the underlying sun spots. An abrupt reversal in the magnetic polarities of spots was observed at the recent sun-spot minimum. At that time the spots were almost completely confined to the higher latitudes. As the cycle has advanced, spots have appeared, as usual, near the equator. The reversal in polarity has persisted in both hemispheres. The conclusion is obvious that the polarity does not depend upon solar latitude. Plates taken with the 13-ft. spectroheliograph, however, show that the direction of whirl of the overlying hydrogen vortices did not reverse. Taken in combination with the fact that as yet no direct evidence of an electric charge in the spot vortex has been obtained, and with the results of the vortex experiments undertaken in 1915, this evidence points to the hydrodynamic hypothesis. The observed facts fall into line if the effect of the spot on the overlying atmosphere is confined to a vertical suction, leaving the sign of the secondary vortex thus induced to be determined by the conditions prevailing at the higher level, conditions which are essentially the same before and after the minimum.

Preliminary results have been obtained for the general magnetic field of the sun. The inclination of the magnetic axis is found to be $5^\circ.2 \pm 0^\circ.5$ and the period of its revolution about the axis of rotation $31^d.51 \pm 0^d.62$. These determinations come out clearly from a discussion of quantities of the order of 0.0002 Angstrom.

Planets and Satellites.—A comparison of the drawings made by six of the Associated Observers of Mars in 1916 shows that two or more observers confirmed the presence of 52 "canals," 22 of which were drawn in by either all the observers or by all but one (*Pop. Astron.*, Dec., 1916). W. H. Pickering reports that his observations of Mars made in Jamaica, show that some of the dark areas shift their positions back and forth a few hundred miles annually. He has been giving especial attention to estimates of the colors of various parts of the surface, making his color matches with a tungsten lamp shining through shade glasses. It is his opinion that the apparent duplication of the so-called canals sometimes observed is due to the rapid passage across the line of vision of waves of irregular density in our own atmosphere. Detailed observations published by Antoniadi appear to confirm his earlier conclusion that the sun-spot period is responsible for a definite periodic change in the meteorology of Mars. With the exception of the two years 1862 and 1877, it was observed that the Martian polar caps melted rapidly in years when sun spots were large and numerous, while the melting progressed more slowly in years of small and few sun spots.

It has long been known that the rings of Saturn are composed of separate particles. Some years ago Barnard observed the satellite Iapetus grow fainter as it passed behind the inner dusky ring and disappear entirely in the shadow of the bright middle ring. This observation was supplemented on Feb. 9 independently by Ainslie and Knight, who watched a star of the seventh magnitude pass behind the outer ring and the Cassini division between the outer and the middle rings. Behind the outer ring the star was much fainter, but it brightened up twice for a few seconds when it was probably crossing two of the five divisions sometimes observed in the outer ring. The star apparently shone with its full brightness while crossing the Cassini division. The divisions, therefore, must be actual vacancies in the ring system, and the outer ring must be partially transparent by virtue of the scattered distribution of its constituent particles.

Lowell and Slipher in 1912 obtained evidence with the spectrograph that Uranus rotates upon its axis in a period of 10 hours and 50 minutes. A striking confirmation has been furnished in 1917 by the photometric observations of Leon Campbell, which show a variation in the brightness of Uranus amounting to 0.15 magnitude in the period given by the spectrograph. It thus becomes probable that a very exact value of the period of rotation can be obtained by continuing the observations. The surface of the planet is apparently not of uniform brightness. The value of the photometric observations will depend upon the permanence of the distribution of brightness.

The ninth satellite of Jupiter, discovered by Nicholson in 1914 (*A. Y. B.*, 1914, p. 586), was observed in 1915 and 1916, and it is now possible to compute a fairly accurate orbit. The orbits of the eighth and ninth satellites are very much alike. Their mean periods of revolution are 739 and 745 days, and their mean distances, 14,600,000 and 15,000,000 miles, respectively. Both orbits are very eccentric, and the motion in both is retrograde. The perturbing effect of the sun is enormous in both cases. The actual paths pursued by these two satellites are consequently very complicated curves, very different from the simple, undisturbed ellipse. The ninth satellite is something like 15 miles in diameter, and might easily escape discovery from Jupiter itself for a long time, its brightness as seen from the planet being of the eleventh or twelfth magnitude.

The variability of several more asteroids, notably of Antigone and Eunomia, has been established. The discussion of the observations at Harvard of the asteroid Eunomia was a very pretty piece of photometric work. It was possible to prove that the observed light variation is due to the unequal brightness of different portions of the surface, rather than to an ellipsoidal shape, and, further, that the rotation of this asteroid about its axis is in the same direction as the revolution about the sun.

Comets.—Comet Wolf (1916b), discovered in 1916 at record distance both from the sun and earth (*A. Y. B.*, 1916, p. 590), was picked up in the morning sky on Dec. 23 by Gallo in Mexico and on Dec. 31 by Barnard. It passed perihelion in June, but continued to approach the earth until August. Both distances, however, remained very large, and the increase in brightness was correspondingly small. Hopes of a brilliant comet raised by the circumstances of the discovery were given up as soon as the orbit was known with sufficient certainty. The comet brightened to about the tenth magnitude in April and to about the eighth in June. Some of the reports seem to indicate that the brightness has fluctuated to quite an extent. As the arc of the orbit covered by observation increased in length, it was possible to rule out the smaller elliptical orbits. The observations show but insignificant deviations from a parabolic orbit.

The object discovered by Metcalf on Nov. 21, 1916, and announced as a comet (*A. Y. B.*, 1916, p. 590) was probably an asteroid.

The discoveries of 1917 have again been relatively few. Comet Mellish (1917a) was discovered on March 19 in the evening sky. This comet was comparatively bright at the time of discovery, being only a little below naked-eye visibility. As the discovery was not cabled to the southern hemisphere, southern observers had the satisfaction of independent discoveries on April 15 and 18, after the comet appeared on the other side of the sun, moving rapidly southward. The comet was then very brilliant, with a tail 20° in length. It passed perihelion in April. The period is probably about 142 years.

Comet Schaumasse (1917b) was discovered on April 25 in the constellation Pegasus, not far from Wolf's comet. Perihelion passage occurred on May 18. Its brightness increased from magnitude 9.5 at the time of discovery to magnitude 5.5 on May 24, when it was at its brightest.

Comet Wolf (1917c), discovered on Sept. 14, was at first thought to be Encke's comet, but later proved to be a new one. No later observations have been reported.

Spectroscopy.—Miss Cannon proposes to photograph a stellar spectrum negative through a photographic wedge, thus obtaining a curve of intensities of the spectral lines as a function of the wave length. It seems probable that stars can be more reliably classified by these curves than by inspection of the original negatives. Merrill has had good success in photographing the extreme red and infra-red of stellar spectra and thinks that the NO_2 band at λ 7590 will probably be of much importance in distinguishing between stars of types M_a, M_b, and M_c.

Photographic Methods.—Lindemann has been able, by using filters to cut off the light rays of short wave length, to photograph stars of the third magnitude at midday with a six-inch telescope.

Douglass has introduced some novel methods to secure photographs of the Zodiacal Light, the faintness and large area of which make it a difficult subject. Exposures are made simultaneously on curved films with several lenses exactly alike, with large ratio of aperture to focal length. On each separate negative the Zodiacal Light is either invisible or very uncertain, but when the plates are placed in a pile, the small effects become cumulative and the Zodiacal Light shows up well.

Double Stars.—The 60-in. Mt. Wilson reflector has demonstrated its efficiency in the photography of the spectra of close double stars. Adams and Joy state that "under good conditions of definition there seems to be no difficulty in securing the separate spectra of stars of 2″ distance, even when the difference in magnitude is considerable." A distant companion of the bright double-star system α Centauri, our nearest neighbor, has apparently been discovered. Voute finds that a faint star of the eleventh visual magnitude has practically the same proper motion and parallax as α Centauri, and hence concludes that it is really a member of the system, in spite of the great separation of 2° 13′. This separation corresponds to a linear distance of something like 10,000 times the distance between the earth and sun.

Nebulæ.—The parallax of a planetary nebula, N.G.C. 7662, has been measured with the 60-in. Mt. Wilson reflector. The sharpness of the stellar nucleus made the measures very accurate, with 25 minutes exposure. The parallax is such as to determine the distance of the nebula as 140 light-years. As the apparent diameter of the nebula is 26″, the linear diameter must be of the order of 19 times that of the orbit of Neptune. Evidence of internal motion in this nebula has been found by spectrographic observations of motion in the line of sight. The form and inclination of the spectral lines exhibit the same characteristics as have previously been interpreted (*A. Y. B.*, 1916, p. 592) as due to a fairly rapid rotation of the central part of the nebula and less rapid rotation of the outlying strata. Assuming the observed velocity as that of a particle about the nucleus, and adopting the value of the parallax found at Mt. Wilson, the minimum value of the mass of the nebula is found to be about 7.3 times that of the sun. In contrast to the above, the parallax of the spiral nebula N.G.C. 5194 comes out as 0.000 ± 0.010, adding strength to the view that the spirals are very distant.

Novæ in Spiral Nebulæ.—Since the discovery by Ritchey of a nova in the spiral nebula N.G.C. 6946 which reached its maximum brightness in July, 1917, an eager search has been made for similar objects which may have been recorded on photographs of spiral nebulæ. Discoveries have been reported with astonishing rapidity during the last few months of the year. Light is thrown on many old problems by these new discoveries. All isolated novæ, hitherto discovered, with one exception, lie in or close to the Milky Way. Their average brightness is about the 5th magnitude. They are probably in our own galaxy. The newly discovered novæ in spiral nebulæ, on the other hand, have an average maximum brightness of about the 14th magnitude and are all far from the Milky Way. There is thus a high probability that the novæ observed in spiral nebulæ are actually in the nebulæ, while their average faintness indicates their great distance and lends support to the "island universe" theory of spiral nebulæ.

Velocity of Globular Clusters.—Slipher has obtained spectrograms of 10 globular clusters, and finds an average radial velocity of 150 km. per second, a velocity between that of the spiral nebulæ and that of the stars.

Variable Stars.—The Harvard photographic observations of eclipsing variables are being reduced at Princeton. Six totally eclipsing systems have been discussed. It was possible in every case to represent the visual and photographic curves by the same geometrical elements. In three cases definite evidence was secured that the disks of the brighter components appear redder at the edge than at the center, as in the case of the sun. In systems where the surface brightness of the components is quite unequal, the one of lower surface intensity is the redder. The whiter component is usually the smaller and denser. A tentative value of 1/6 was found for the ratio of difference in color index to difference in surface brightness. As soon as this ratio is accurately known, it will be possible to estimate the linear diameters of stars of known parallax and color index. (*Astrophys. Jour.*, xlv, p. 306.)

Star Colors.—Two stars with a color index of about five magnitudes (three times that of ordinary red stars) have been photographed at Harvard. One is the variable S Cephei. Their unusual redness made them very difficult objects to photograph. Spectra of these stars have been secured on plates stained with pinacyanol, taken with the objective prism over the 24-in. reflector.

There has been a need for a rapid method of determining star colors. The spectral classification does not take into account the influence of intrinsic luminosity or a color change produced by a possible scattering of light in space. The accumulation of color-index data from photographic and photovisual brightness is slow. Seares finds that a very good estimate of color can be obtained from the ratio of exposure times necessary for the blue and yellow light of a star to produce images of the same size.

General Studies.—The photometric study of star clusters has been continued by Shapley. From the presence in the great globular cluster in Hercules of many faint bluish stars which are of high luminosity in our own galaxy (*A. Y. B.*, 1916, p. 591), he assumed great distance for the cluster, and concluded that, at least in the direction of this cluster, there was no appreciable absorption of light in space. Similar studies of other clusters, several of them near the Milky Way, have resulted in the finding of the same normal range of color in these distant objects seen in as many different directions. These results argue for the absence of anything like a uniform distribution of light-absorbing material, either in our own stellar system or in space beyond. The conclusion that meteoric streams and comets form an original part of the solar system may be justified. Such results are not to be taken as in conflict with the evidence that there are present in space isolated masses of absorbing material.

Wolf has secured spectrographic material which seems to show that some of the dark rifts and holes in the Milky Way (*A. Y. B.*, 1916, p. 591) are faintly self-luminous nebulæ, strongly scattering the light of the bright stars seen in them. In this connection may be mentioned the explanation that has been given for the variation in brightness that has been observed in three nebulæ. In each case there is a well-known variable star in the midst of the nebula. It is suggested that the nebula shines by reflecting the light pulses which flow over it from the variable-star nucleus. Accepting this explanation, one may calculate the distance of N.G.C. 2261 as something like 12,000 light-years.

Radial velocity measures in recent years have clearly shown that stars of large proper motions also possess high space velocities. High velocity might thus be a characteristic either of stars that are near or of such as are intrinsically faint. Adams and Stromberg have concluded, from a discussion of 1,300 stars, that there is an increase in velocity of about 1.5 km. per second for each decrease in brightness of one magnitude.

The method devised by Adams of obtaining absolute magnitudes and, by a generalization, parallaxes from the intensities of certain spectral lines (*A. Y. B.*, 1914, p. 590) has been applied by him to quite a number of M- and later K-type stars. He finds marked evidence of the giant and dwarf groups (*ibid.*), the two groups of M stars being separated by a range of seven magnitudes. Further, in the giant stars, the hydrogen and enhanced lines are strong and the low-temperature lines are weak; in the dwarf stars the case is reversed.

Perrine finds that the planetary nebulæ show a preference in their location for the vertices of ellipsoidal motion (*ibid.*) of the stars of our own galaxy. The radial velocities show a preferential motion in these directions. Most of the planetary nebulæ are in the Milky Way and the rest are nearly all in the Magellanic Clouds. He concludes that the planetary nebulæ belong to our own stellar system and the Magellanic Clouds are probably isolated patches of the Milky Way.

Jeans and Eddington have been working on the figure and equilibrium of stars. Jeans finds that masses composed of matter as compressible as ordinary gas will develop, before they lose their stability through increase in rotation speed, a sharp edge along the periphery from which will be ejected streams of matter, much as imagined by Laplace. In the case of a system of enormous mass it can be shown that the ejected matter will condense into separate masses comparable with those of stars rather than of planets.

Eddington favors the view that heat is brought to the surface of a star chiefly by radiation. The temperature gradient from center to surface will not be so steep if a part of the weight is supported by radiation pressure. Furthermore, it is quite probable that at the high temperature of the interior there is partial or complete ionization, and that in some cases gravitation is then largely opposed by the pressure of the electrons moving about independently. Eddington finds for complete ionization that as the mass of a gas sphere is considered to increase from one to 20 times that of the sun, the ratio of pressure to gravitation would increase from 0.1 to 0.8. Masses in which the pressure and gravitation were nearly balanced would be on the verge of instability, and any slight disturbance would cause them to divide and subdivide until the masses were below the danger limit. Thus we have a possible explanation of the fact that stars of enormous mass are almost unknown. The effective temperature of a giant star is proportional to the sixth root of the density. The total radiation is independent of the stage of evolution and depends only upon the mass. This second law finds confirmation in the observed fact that giant stars of various types are fairly uniform in luminosity. Reasoning concerning stars too dense to behave as a perfect gas is based on more doubtful assumptions, but it seems probable that a star must have at least one-seventh the sun's mass in order to attain an effective temperature of 3,000°, the temperature of the M-type stars. Stars with mass less than 2.2 times the sun's mass will not reach the B stage.

XXII. GEOLOGY, METEOROLOGY, AND GEOGRAPHY

GEOLOGY

DYNAMICAL AND STRUCTURAL GEOLOGY

J. B. Woodworth

Geology in War.—Topography, in the modern sense the form of the military terrain, has been recognized from remote times as a vital factor in the movement of armies and in the operations of attack and defense, and geographic maps prepared with reference to military needs have been for more than a century special objects of care of army engineers. At the time of Napoleon's campaigns there was no complete geological survey of any country, and only in recent years have high-grade geological maps and a corps of geological surveyors been at the service of national armies. While at all times armies have been supported by empirical exploitation of natural resources and have been conducted in the field with superficial knowledge of the nature of the terrain, it is only within the last half century that scientific knowledge of the nature of the substructure of the ground at the front and in the field of support in the rear has been brought to such a point of perfection that the geologist can claim to be an indispensable aid to the military commander.

The assistance which the geologist can give to an army was recognized early in the present war by the Germans, who in December, 1915, made geologists a part of the army organization on different parts of the front. A staff of geologists was created, under the direction of a professor of the University of Greifswald, to give advice on such matters as the laying of field railways, provision of water supplies, examination of marshes, finding of road-metal, and guarding against landslides exposed to gunfire. Advices received in England hint that geological maps have played an important *rôle.* A review of German practice in a paper on *Geology at the Seat of War*, by Dr. Aubrey Strahan, Director of the Geological Survey of Great Britain (*Geol. Mag.*, N. S., Dec., 1916, and Feb., 1917) is followed by statements showing that similar methods of turning a knowledge of geological principles to account have been adopted by the British on the western front. The same paper contains a summary account of the geological formations upon which the trench warfare of the western battlefront has been conducted up to the present writing.

In the United States, thanks to the organization of the Committee on Geology and Palæontology of the National Research Council, working with the Federal and other geological surveys, the importance of geological methods in utilizing a field for military ends has been thoroughly impressed upon all concerned since the declaration of war against Germany. As evidence of the appreciation of the new arm in military operations, it may be noted that two officers of the U. S. Geological Survey have been appointed major in the Engineer Corps for service in France, and it is understood that one or more competent field geologists are to serve as captains in the scientific work of the Signal Corps (see also IX, *U. S. Geological Survey*). The use the military officer not acquainted with professional geological methods of field research may make of a geologist is very succinctly described in a pocket brochure prepared by Dr. R. A. F. Penrose, Jr., for the Committee on Geology and Palæontology, of the National Research Council, under the title, *What a Geologist can do in War* (Philadelphia, Lippincotts, 1917). The geologists of the country have been thoroughly organized for the prosecution of the war wherever and whenever their services may be needed.

Geological Society of America.—Volume xxvii of the *Bulletin* of the Geological Society of America, which includes fellows elected from Canada, Mexico, and the South American republics, was completed in December, 1916. The December part contains the first of a series of articles on a "Comparison of American and European Lower Ordovicic Formations", by Amadeus W. Grabau, and papers on the "Glacial Lakes of the Central Adirondacks", by H. L. Alling, and the "Triassic Rocks of Alaska", by G. C. Martin. Part 1 of Volume xxviii (March, 1917) contains an abbreviated record of the Albany meeting of the Society, the presidential address of Dr. John M. Clarke, on "The Philosophy of Geology and the Order of the State", being printed in full. In the same issue H. S. Washington presents observations from the volcano Stromboli in support of Daly's "gas-fluxing" hypothesis of eruptions, which appears to be applicable to at least some well-known volcanoes.

U. S. Geological Survey.—Since October, 1916, the following folios of the *Geologic Atlas of the United States* have appeared: No. 203, Colorado Springs, Col., by G. I. Finlay; No. 204, Tolchester, Md., by B. L. Miller, E. B. Matthews, A. B. Bibbins, and H. P. Little; No. 205, Detroit, Mich., by W. H. Scherzer; No. 206, Leavenworth-Smithville, Mo., Kans., by H. Hinds and F. C. Greene; No. 207, Deming, N. M., by N. H. Darton. More than 25 new bulletins have been published, dealing chiefly with the geological structure and occurrence of useful minerals (see also IX, *U. S. Geological Survey*). N. H. Darton has an instructive report on palæozoic sections in southern New Mexico (Prof. Paper 108-C), and M. R. Campbell has published a useful introduction to a report on the "Coal Fields of the United States" (Prof. Paper 100-A), accompanied by a large-scale folded map of the United States, showing the distribution of coal fields (see also *Economic Geology, infra*). Bull. 597, by Prof. B. K. Emerson, on the Geology of Massachusetts is accompanied by a geological map of the state, presenting for the first time an accurate and somewhat detailed plan of the complex rock groups of this commonwealth.

State Geological Surveys.—W. J. Miller, in Bulletin 193 of the New York State Museum, gives a summary account of the geological history of the Adirondack Mountains. Fletcher Hamilton, State Mineralogist of California, is responsible for the issue of a new geological map of the state, scale, *ca.* 1.2 miles to the inch, geology by James Perrin Smith. (See also IX, *State Geological Surveys.*)

Geological Survey of Canada.—A compendious bulletin of the Geological Survey of Canada (Memoir 93, Geol. Ser. 78) on "The Southern Plains of Alberta," by D. B. Dowling, deals chiefly with Cretaceous strata. The Belly River Series between the Benton shale below and the Bearpaw shale above is divided into the Milk River sandstone of fresh-water origin, the Pakowki shale of marine origin, the Foremost beds, brackish and coal-bearing, and the Pale beds, fresh-water, sand and clay, in ascending order.

Geological Survey of Brazil.—Further details concerning the Permian glacial deposits of southern Brazil have been brought to light in the renewed search for workable beds of coal in the state of Paraná (Eusebio Paulo de Oliveira, "Notice of the Coal Mines of the Basin of the Rio das Cinzas", Rio de Janeiro, 1916, title translated from the Portuguese original). The coal has been found within 50 m. of the surface, chiefly in what appears to be one bed varying in thickness from 0.15 m. to 0.8 m., and is frequently pyritiferous. Locally two layers of coal have been encountered in the borings. The fixed carbon in the analyses varies from above 30 per cent. to over 70 per cent.

ECONOMIC GEOLOGY

ADOLPH KNOPF

Copper Ores.—The report on "The Geology and Ore Deposits of Ely, Nevada", by A. C. Spencer (U. S. Geol. Surv. Prof. Paper 96) presents the results of the first monographic study of some of the great deposits of disseminated copper ore, popularly known as the "porphyry" coppers, which in recent years have begun to dominate the copper output of the country. A specially noteworthy feature of the report is the discussion of the primary sulphide deposition in terms of the concepts of physical chemistry. The primary sulphides were deposited early in Cretaceous time, shortly after the intrusion of monzonite porphyry into a series of Palæozoic limestones, quartzites, and shales. The whole process of mineralization appears to have lasted a definite and rather short interval of time, and because no evidence was found in the paragenesis of the metallic sulphides to indicate that the mineralizing solutions progressively changed in character during sulphide deposition, it is believed that the solutions had about the same composition throughout the chief epoch of mineralization, and that this epoch was terminated abruptly by a critical change which occurred in the differentiating magma from which the solutions emanated. As the result of this mineralization immense masses of porphyry carrying primary sulphides low in copper were produced. The enrichment by which these masses became sufficiently high in copper to be commercially valuable took place at a far later date. The problem of this enrichment, the main geologic problem presented by the ore deposits, is exhaustively considered, especially with reference to the chemistry of the process.

Some important generalizations concerning the ore deposits of the Boulder batholith of Montana are formulated by Billingsley and Grimes (Bull. *Am. Inst. Min. Eng.*, No. 124). They recognize three epochs of ore deposition, which they term, respectively, the granite, aplite, and quartz-porphyry stages. The mineralization of the quartz-porphyry stage is restricted to the Butte district, the copper deposits of which are genetically referred to these intrusions. This restriction is possibly one of the reasons why the ores of the Butte district differ so strongly from those of the other districts of the Boulder batholith. The great number and richness of the copper deposits (the Butte district is the richest mineralized area in the world) indicate that the local granite magma was unusually rich in copper. The great vertical range of the copper ores at Butte is thought to be due to long continuance of the mineralization and to the downward migration of the horizon of precipitation during ore deposition.

Silver and Gold Ores.—F. N. Guild (*Econ. Geol.*, XII) presents the results of a fundamental study of the microstructure of the silver ores and their associated minerals. The numerous fine photomicrographs of polished sections are notably illuminating. *The Banket,* a study of the auriferous conglomerates of the Witwatersrand and the associated rocks, by R. B. Young, is based largely on a series of earlier papers by the author. It is a concise and attractive volume, chiefly petrographic, supporting the theory of the Placer origin of the gold in the Rand deposits.

Magmatic Ores.—Tolman and Rogers (Leland Stanford, Jr., Univ. Pub., Univ. Ser., 1916) have made a thorough laboratory investigation of the microstructures of the magmatic sulphide ores, in conjunction with a careful study of the literature of the magmatic sulphide deposits. As the outcome of their studies they propose the hypothesis "that the magmatic ores in general have been introduced at a late magmatic stage as the result of the mineralizers and that the ore minerals replace the silicates." This replacement differs from that caused by pneumatolytic or hydrothermal processes, however, in that neither quartz nor secondary silicates are formed with the ores.

Oil and Gas.—*Principles of Oil and Gas Production,* by R. H. Johnson and L. G. Huntley (New York, Wiley, 1916), is a valuable book describing not only the technology of oil and gas extraction but also the geologic occurrence and origin of oil and gas. It gives also a very condensed account of the oil and gas fields of North America. Much new matter on the theory of oil and gas accumulation is presented.

Oil-field Development and Petroleum Mining, by A. Beeby Thompson

(London, Crosby Lockwood and Son, 1916), is probably the best work of its kind. Its title does not adequately indicate its contents, for five of its 14 chapters are devoted to a thorough exposition of the principles of petroleum geology.

Oil shales in various parts of the world are being carefully studied. Conacher (*Trans. Geol. Soc. Glasgow*, XVI, Pt. 2, 1917), using an improved technique, has made very thin sections of Scottish oil shales. He believes that these oil shales were formed in quiet estuarine mudflats, to which water flowing from swamps supplied large quantities of finely macerated vegetable matter.

The oil shale in northwestern Colorado and adjacent parts of Utah and Wyoming has been closely investigated by D. E. Winchester (U. S. Geol. Survey Bull. 641-F), in continuance of earlier work done by the U. S. Geological Survey. It appears that in Colorado alone there is sufficient shale to yield 20 billion barrels of crude oil and 300 million tons of ammonium sulphate. The yield per ton in oil and ammonium salt compares very favorably with that of the Scottish oil shale.

The principles governing the estimation of petroleum reserves are discussed by Pack (*Bull. Am. Inst. Min. Eng.*, No. 128). After outlining some of the methods previously used in estimating the available supply of oil, he presents a new method which is particularly applicable to such fields as those of California. In brief, the method depends on the use of a curve based upon field production in unit time and modified to take into account the number of new wells required to drill the field completely.

G. S. Rogers (U. S. Geol. Surv. Bull. 653) points out some significant features in the chemistry of the oil-field waters in San Joaquin Valley, California. Sulphate, which predominates in most of the shallow ground waters, diminishes as the oil-bearing zone is approached and finally disappears. Concurrently, carbonate increases, though this change is largely influenced by the concentration of chloride. The decrease in sulphate and increase in carbonate as the oil-bearing zone is approached is attributed to reactions between the waters and the constituents of the oil and gas. These relations, therefore, can be made to serve as a guide in prospecting for oil and gas.

Coal.—M. R. Campbell has written an introduction to a report "Coal Fields of the United States", (U. S. Geol. Surv. Prof. Paper 100-A) which is to sum up existing knowledge regarding the extent and quality of the coal of the United States. The present introductory report describes briefly the various fields, and the succeeding installments, which are being written by the specialists best acquainted with the individual fields, will give the details of the coal resources of the country. Campbell now estimates that the original tonnage of coal in the United States within 3,000 ft. of the surface aggregated 3,554 billion tons, a considerable increase over his previous estimate.

MINERALOGY AND PETROGRAPHY

Herbert P. Whitlock

New Minerals.—The entry of the United States into the European War is marked by a strong tendency toward the utilitarian in every field of scientific endeavor. We consequently find that during the year mineralogical progress has turned largely in the direction of the mineral industries and the exploitation of those minerals which may be used in the manufacture of war materials.

Despite the comparative lack of activity along purely research lines, however, several names have been added to the list of new minerals. *Creedite,* a new fluoride-sulphate of aluminium and calcium, soft, powdery and white in color, related to the rare mineral gearksutite, was discovered near Wagon Wheel Gap, Col. *Crandallite,* a new hydrated phosphate of aluminium and calcium has been added to the long list of unique minerals to be found in the Tintic district of Utah. Two new zinc phosphates have been discovered at the Hudson Bay Mine at Salmo, B. C., and have been named *spencerite,* in honor of Mr. L. J. Spencer of the British Museum, and *hibbenite,* in honor of President John G. Hibben of Princeton University. A new lead-calcium metasilicate was recently found at Franklin, N. J., to which the name of *margarosanite* has been given, descriptive of its pearly, tabular structure. The finding of a new ferro-magnesium borate, closely related in composition to the rare mineral ludwigite, has led to the establishment by Butler and Schaller of a new group among the borates, comprising the species formerly known as ludwigite and now renamed ferroludwigite, the new ferro-magnesium borate, to which the name *magnesioludwigite* has been given, and pinakiolite, a rare manganese-magnesium borate. A new lead chloride from Loretto, Tenn., has been given the name *lorettoite*. A new mineral of the chlorite group has been found in the amygdoidal basalt of Griffith Park, Los Angeles, Cal., and named from the locality *griffithite*.

Publications.—The year has marked the beginning and development of a monthly periodical devoted exclusively to the science of mineralogy. The *American Mineralogist*, the first number of which was published in July, 1916, appears more in the *rôle* of a revival than in that of a new departure, inasmuch as it assumed at its inception the field of a mineral collectors' magazine, left vacant by the discontinuance in 1909 of the *Mineral Collector*. Those who have followed the new publication through its first year of life, however, must realize that it has already developed into a scientific journal of weight and standing, that it is publishing original articles by scholars of distinction, and that it provides a means of following the activities of the mineralogical societies and clubs as well as the current progress of the science.

In his *Descriptive Mineralogy* (New York, Appletons, 1917), Prof. William Shirley Bayley of the University of Illinois has produced a textbook for college classes which is unique in its emphasis on the chemical relations of minerals and the uses to which they are put in the manufacturing arts. That such a treatment of the subject is both timely and important no one who is familiar with the modern aspect of the science and with the present situation in the mineral industry can for a moment question. Professor Bayley has done his work with a clearness of statement and an abundance of well chosen illustrations which makes his book not only valuable but very readable. Especially clear are his opening chapters on "Composition and Classification" and "Formation of Minerals", in which the discreet use of chemical equations are of material service in illustrating such paragraphs as "Partial Pseudomorphs" and "Weathering." In giving statistics of production the author has very wisely chosen 1912 as a more nearly normal year in trade than those which followed it, and has accordingly quoted the 1912 production under each economically important species discussed.

The treatment in the body of the text is essentially modern, especially in the order in which the species are discussed, which differs from that of Hintze's *Handbuch der Mineralogie* in essential features, although following his more advanced chemical classification in its main lines. The reader finds frequent paragraphs on the synthesis of individual species and a judicious use of graphical formulæ as well as expanded descriptions. The closing chapters are devoted to a short but very well arranged exposition of determinative mineralogy, and here again the use of chemical equations contributes in no small degree to the clearness of the statement. The crystallographic line cuts are well chosen and there is an abundance of good and characteristic half-tone plates.

In the latest edition of *Elements of Mineralogy, Crystallography and Blowpipe Analysis* by Alfred J. Moses and Charles Lathrop Parsons (New York, Van Nostrand, 1916), we have the case of a well known textbook which has been to such an extent rewritten, added to, and brought up to date that it stands as essentially a new book. Especially striking and original is the simplified method of classifying and identifying crystals. The chapter on "Crystallo-Optics" has been very much expanded, in recognition of the rapidly growing use of the polarizing microscope as a determinative instrument in the mineral laboratory. Perhaps the most significant additions occur in the chapters which discuss the minerals of metalliferous ore deposits and the rock-forming silicates, where a section dealing with the formation and occurrence of the species under discussion is introduced under each economic group of minerals. A chapter devoted to minerals used as precious stones shows familiarity with the practical as well as the theoretical side of gemology. The determinative tables, which have always been a salient feature of this textbook, have been completely remodeled, to cover, as a parallel addition to the usual blowpipe determination, the optical determination of the minerals in crushed fragments, a very timely and valuable innovation. The scope of the book is increased to include a number of additional species not discussed in former editions.

Gems and Precious Stones.—The war, which bids fair to prove a considerable factor in shaping the ideals of taste and culture for coming decades, has already made its influence felt in the growing demand for the less expensive gem minerals in jewelry. The diamonds, rubies, sapphires and emeralds which long have dominated popular appreciation as standards in jewelry are in these days of simplicity and unostentation yielding to the topazes, tourmalines, amethysts and peridots, gems quite as beautiful when artistically set as the so-called precious stones and far less expensive. That this is a real demand, reflecting an actual trend of public sentiment, is evidenced by a recent article published in the leading jewelers' trade journal ("A Plea for the Development of the Sale of Inexpensive Jewelry", *Jewelers' Circular*, Sept. 26, 1917).

Dr. George Frederick Kunz has again drawn upon his apparently inexhaustible supply of unusual information regarding gems in his recent book under the title of *Rings* (Philadelphia, Lippincotts, 1917). Much of the body of this work has a distinct bearing upon the subject of gems and gem minerals, and it abounds in facts which would be exceedingly difficult to find elsewhere. On the whole Dr. Kunz has given us in this volume a much more thorough, painstaking and scholarly work than those which have yet appeared over his name. The illustrations, both in color and half-tone, are well chosen and abundant, and the make-up of the book is excellent.

EARTHQUAKES AND VOLCANOES

HARRY FIELDING REID

Earthquakes.—No very strong earthquakes have occurred in the United States during the year; the following are the more important. A fairly sharp shock was felt at Glens Falls, N. Y., on the evening of Nov. 1, 1916. Shocks were felt in the St. Lawrence Valley on Jan. 26 and May 22; they were not very strong, but were felt over the neighboring parts of New York and Vermont and Canada; they seem to have had the same origin as the shocks of 1913 and 1914. The strongest shock of the year occurred on April 9 in eastern Missouri, with its center about 40 miles southwest of St. Louis; it was strong enough to break some windows and throw bricks from some chimneys, and it was felt over an area of about 200,000 sq. miles, including 10 states. Crow Wing, Morrison, Todd and Waden Counties, in central Minnesota, felt a very sharp shock at 3.30 p. m. on Sept. 3; houses swayed and some windows were broken, but the shock itself was very local. On Feb. 6 a very light shock was felt about 125 miles further north. The whole eastern edge of Arizona felt a moderately strong shock on Dec. 12, 1916; an area of probably 25,000 sq. miles was sensibly shaken.

The so-called Moodus noises were heard in Moodus, Conn., on Dec. 2, 1916, and Feb. 16. Light shocks occurred in central Alabama on Nov. 4, 1916, and June 29. Near Knoxville, Tenn., sharp but light shocks were felt on March 4 and 25. Light shocks were felt about the sunken region of southeastern Missouri on Dec. 18, 1916, May 9 and June 9. Shocks are reported from the neighborhood of Boulder, Col., on Oct. 11, 1916; Rawlins, Wyo., March 10; Butte, Mont., April 22; Panhandle, Tex., March 28; Hailey, Idaho, Sept. 9, 1916; Pearson, Idaho, April 19; Cotton Wood, Idaho, June 1; Silverton, Wash., Nov. 21, 1916; and from southwest of Mt. Rainier on March 28 and June 9. Light shocks were felt in the northern part of Nevada on March 28, and June 1; at Rhyolite on Nov. 10, 1916, and at Fallon on April 15. Many shocks have been reported from Unionville, in the northwestern part of the state; most of them were very light, but on Dec. 24, 1916, at 11.30 a. m., and two days later, at 9.40 a. m. and 10.50 p. m., strong shocks were felt in that neighborhood.

Light shocks are reported from Cedarville, Cal., on April 13 and 15; from Markleeville on May 11, and from the neighborhood of Eureka on March 3, June 26 and July 21. There have been a number of shocks in Owens Valley, in the eastern part of California, the scene of the very strong earthquake of 1872. The strongest of these shocks occurred at 3.01 a. m. on July 6, and appears to have been felt about 100 miles along the valley. Other shocks, none strong, are reported on Nov. 9 and Dec. 7, 1916, Feb. 9, March 18, 19 and 21, June 21, July 8 and Aug. 27. Light shocks were felt on Feb. 9, March 29, April 2 and Sept. 12 and 24 in the neighborhood of San Francisco Bay. In the Salinas Valley, further south, shocks are reported on Oct. 24, Nov. 3 and 27, 1916, March 13 and June 8. In the southern part of St. Luis Obispo County shocks were felt on Dec. 1, 1916, Jan. 31, July 7-9 and 26. Those in early July seem to have been the strongest; eight shocks were reported within three days, some of which damaged chimneys, though the area affected was very restricted. On April 12 and 20 shocks originating in the Santa Barbara Channel were fairly strongly felt on the mainland. Santa Rita also reported a light shock on April 5. Shocks were felt at Fillmore on March 29 and at Ojai on Aug. 31. On Nov. 1, 1916, the Leonas Valley was shaken; this earthquake is interesting, as it seems to represent a movement on the southern continuation of the San Andreas fault. Los Angeles and Kern Counties felt a light shock on Jan. 12, Victorville on June 2, and Mt. Wilson on July 15, this last being probably due to a movement on a fault just south of San Gabriel Mountains. Quite a number of shocks have been reported from the town of Los Angeles, but all were local and light. Yorba Linda felt slight shocks on May 18 and 20; the mountainous region near the southwestern corner of the state reported shocks on June 10 and 21 and Aug. 18. Cahuilla, in the San Jacinto Mountains, was slightly shaken on Nov. 26, 1916, June 1 and Aug. 2. Many shocks have been reported from the Imperial Valley, but none of any importance; the dates given are Oct. 22, Nov. 2, Dec. 7 and 18, 1916; April 18, May 17, 27, June 7 (3), 10 (2), 12, 16 and 18 (2), Sept. 4 and 8.

On July 13 a sharp shock was felt in the western part of Porto Rico, and on the 26th a still stronger shock throughout the whole island. A very severe shock was felt in Santo Domingo on the evening of Nov. 29, 1916. A little before 11 p. m., on May 30 a very severe shock was felt at Unga, Aleutian Islands; it is reported to have lasted two minutes. The Samoan Islands experienced a very severe earthquake on June 25, which damaged buildings in Apia to such an extent that they could no longer be used; a tidal wave several feet high entered the Apia and Pago Pago harbors; the origin of the earthquake was submarine and probably south of the islands. A severe submarine shock occurred in the Celebes Sea on Jan. 31, and caused much damage and several deaths in southern Mindanao, P. I.

Late in December a press report from San Salvador recorded a severe earthquake in Guatemala, which completely destroyed Guatemala City. The railroad depot, sugar mills, postoffice, American and British legations, United States Consulate, and all the churches in the city, were leveled. The inhabitants fled from the capital. The American Red Cross immediately dispatched a relief ship to the stricken city.

Volcanoes.—Lassen Peak continues to emit smoke and ashes from time to time. This activity was rather marked on Nov. 1, Dec. 10 and 25, 1916, and Jan. 15-17. The volcanoes

Pavlov and Shishaldin, Aleutian Peninsula, were active in May and June. The volcano San Salvador, in the state of that name, became very active in the evening of June 7 and continued its eruptions all the summer. Its outburst was preceded by heavy earthquakes which wrecked the city of San Salvador and all the neighboring towns.

METEOROLOGY AND CLIMATOLOGY

ROBERT DEC. WARD

General Meteorology.—The most notable single American publication on meteorology during the year is undoubtedly Prof. Alexander G. McAdie's *Principles of Aerography* (Chicago, Rand, McNally, 1917). This book deals with the most recent advances in meteorology as a whole, special emphasis being laid on modern methods of dealing with the problems of the atmosphere and on the practical application of the available knowledge. The author's experience of many years in the Weather Bureau and recently as director of the Blue Hill Observatory has given him unusual qualifications for the preparation of such a discussion. While *The Principles of Aerography* is unquestionably an important addition to the available textbooks on meteorology in English, none of which is thoroughly up to date, the high degree of condensation of the subject matter makes it somewhat better adapted for use as a reference book than as a text. A distinguishing feature of the work is that metric and absolute units are used exclusively.

The Weather Bureau.—The free-air data collected by the U. S. Weather Bureau have been summarized by Prof. W. R. Blair in two "Supplements" to the *Monthly Weather Review* (No. 3, 1916, and No. 7, 1917). A noteworthy discussion of the types of anticyclones of the United States and their average movements, illustrated by numerous charts, has been published by E. H. Bowie and R. H. Weightman (*ibid.*, Suppl. No. 4, 1917). This is a companion study to a previous study of cyclones by the same authors. Another notable contribution to American climatology is a discussion of relative humidities and vapor pressures over the United States by P. C. Day (*ibid.*, Suppl. No. 6, 1917). This includes a study of data from recording hair hygrometers and contains a new series of humidity charts.

Treatment of Climatic Data.—Dr. C. F. Marvin, Chief of the Weather Bureau, has outlined the essential principles of the methods of least squares and the theories of statistics and correlation with reference to their application in the analyses and presentation of climatic data and their utilization in the solution of problems of agricultural meteorology (*Mo. Wea. Rev.*, xliv, 1916). The use of frequency curves offers in many respects the most systematic method of examining the variations present in a series of meteorological observations, and is therefore to be recommended in connection with agricultural operations. In this connection H. R. Tolley has prepared a useful paper on the use of frequency curves in studies of climatic phenomena (*ibid.*). Along similar lines, W. G. Reed has considered the importance of using coefficients of correlation in the study of crops and meteorological conditions, rather than limiting such studies merely to a comparison of plotted variables (*Quart. Publ. Am. Statis. Assoc.*, June, 1917). Reference may be made also to a discussion by Thorndike Saville of rainfall data interpreted by the laws of probability (*Eng. Mag.*, lxxvi, 1916).

Climatology of the United States.—A new map showing the average annual precipitation (inches) over the United States has appeared as "Advance Sheet No. 1" (Jan., 1917) of the forthcoming *Atlas of American Agriculture*. This map is based on records of about 1,600 stations for the 20-year period 1895-1914 and 2,000 additional records, from five to 19 years in length, uniformly adjusted to the same period. The actual conditions of rainfall over the country are now shown more accurately than ever before. Topographic controls of the amounts of precipitation are taken into account. A revision of the rainfall types of the United States has been undertaken by Prof. R. DeC. Ward (*Geogr. Rev.*, iv, 1917). The economic significance of the different seasonal distributions of rainfall is noted. The diurnal distribution of precipitation in the United States has hitherto received little attention, although there are important economic relations which depend upon the time when the rain falls. J. B. Kincer has made a useful contribution to this topic in a study of daytime and nighttime precipitation in the United States, and their economic significance (*Mo. Wea. Rev.*, xliv, 1916). The snowfall of New England has been thoroughly studied by C. F. Brooks, who has constructed a new series of snowfall maps based on data for the period of 1895-1916 and has given a critical discussion of them (*Geogr. Rev.*, iii, 1917). A somewhat more extended paper by the same author has also appeared (*Mo. Wea. Rev.*, xlv, 1917). Prof. A. G. McAdie has published a second part of his study of the winds of Boston and vicinity (*Ann. Astron. Obsy. Harv. Coll.*, lxxxiii, Pt. 1, 1917). Special emphasis is laid on the seasonal variations in pressures over the North Atlantic, and upon the effects of the pressure distribution on wind directions and the character of the seasons. Prof. R. DeC. Ward has considered the tornadoes of the United States as climatic phenomena (*Quart. Journ. Roy. Met. Soc.*, xliii, 1917). The conclusion is reached that the business of tornado insurance needs revision in the light of the facts regarding tornadoes which meteorological science has brought together. The most complete discussion of the occurrence of hail in the United States is that of Prof. A. J. Henry (*Mo. Wea. Rev.*, xlv, 1917), who has compiled the available statistics. Annual and seasonal charts accompany the paper. The climatological data for the United States continue to be published by the U. S. Weather Bureau by sections in the *Monthly Weather Review.*

Agricultural and General Climatology.—W. G. Reed points out that the weather hazard can be so well determined in many cases that insurance against the occurrence of killing frost, or any other unfavorable weather condition, may be arranged on a sound business basis (*ibid.*, xliv, 1916). The relation of weather to the amount of cotton ginned during certain periods has been studied by J. B. Kincer (*ibid.*, xlv, 1917). A new chart showing the probable length of the growing season in the United States has been constructed by W. G. Reed, and is a very useful addition to our knowledge of the economic climatology of the country (*ibid.*, xliv, 1916). In Dr. Isaiah Bowman's *The Andes of Southern Peru* (New York, Holt, 1916) there is an excellent discussion of Peruvian climates. Special emphasis is laid upon the human and plant relations.

Changes of Climate.—The old lake beds of Death Valley preserve records of past climatic changes which suggest to Dr. Ellsworth Huntington the possibility of using the facts in the prediction of future changes (*Harper's Mag.*, cxxxii, 1916). That the fall of Rome was connected with a change of climate to a condition unfavorable to agriculture is suggested by the same author. (*Harv. Univ. Quart. Journ. Econ.*, Feb., 1917). The prevalence of malaria during a period of increasing aridity may also have been a contributing cause.

Miscellaneous.—A brief summary of results thus far obtained regarding world-wide temperature correlations is given by Dr. Chas. F. Brooks (*Geogr. Rev.*, ii, 1916), who also adds results of recent correlations of a similar kind which he has himself investigated. A useful paper on the duration and intensity of twilight has been published by Prof. H. H. Kimball (*Mo. Wea. Rev.*, xliv, 1916). Prof. A. G. McAdie makes a plea for the use of the new C. G. S. units in meteorology and for the introduction of a new temperature scale designed to replace the absolute scale (*Ann. Astron. Obsy. Harv. Coll.*, lxxxiii, Pt. 1, 1917; see also *Geogr. Rev.*, iv, 1917). Prof. R. DeC. Ward has continued his papers on the influence of weather upon military operations in the war (*Jour. Geogr.*, 1916, 1917; also *Jour. Mil. Service Inst.*, lxi, 1917).

Every year emphasizes more clearly the importance of variations of solar radiation in relation to meteorological conditions on the earth's surface. A study by H. H. Clayton proves that there is a close relation between solar changes and meteorological changes of short period (*Smithson. Misc. Coll.*, lxviii, No. 3, 1917).

TERRESTRIAL MAGNETISM

DANIEL L. HAZARD

Observations on Land.—The magnetic survey of the United States was continued during 1917 by the occupation of about 200 primary stations, including the usual proportion of repeat stations, and 125 auxiliary stations for developing in more detail the distribution in areas of local disturbance. The five magnetic observatories were continued in operation. Owing to war conditions, field work in the magnetic survey of Canada was suspended, but the operation of the observatories at Agincourt and Meanook was continued. The Department of Terrestrial Magnetism of the Carnegie Institution of Washington had parties at work as follows: in Africa, through French Congo to Lake Tchad and thence eastward to Anglo-Egyptian Sudan; in Asia, in Southern China; in Western Australia, in connection with the selection of a site for a magnetic observatory; in South America, in Peru, Chile, Bolivia, Brazil, and Argentina. It has secured a grant of 220 acres of land about 10 miles west of Watheroo, Western Australia, as a site for a magnetic observatory and allied investigations of atmospheric electricity and earth currents, and the erection of the observatory buildings is in progress. A site for an observatory has been selected in Peru, near Huancayo, about 150 miles east of Lima, at an elevation of 11,000 ft.

Observations at Sea.—The *Carnegie* left San Francisco in November, 1916, going by way of Easter Island around Cape Horn to Buenos Aires, where she arrived on March 2 after a voyage of 14,775 miles, during which she crossed the tracks of previous cruises 18 times. Work was suspended when the United States entered the war, but it was planned later to send the *Carnegie* back around Cape Horn for further work in the Pacific Ocean.

Publications.—The U. S. Coast and Geodetic Survey has published the results of field observations made during 1916, and *United States Magnetic Tables and Magnetic Charts for 1915*, containing the collected results of observations at about 6,500 places in the United States and adjacent land and water areas to the end of 1915, and five maps showing lines of equal declination, dip, horizontal intensity, vertical intensity, and total intensity for January 1, 1915. The Department of Terrestrial Magnetism of the Carnegie Institution of Washington has issued Volume III of Publication No. 175, giving the final results of the ocean magnetic work from 1905 to 1914 and preliminary results for 1915 and 1916, together with reports on the atmospheric-electricity observations and on special researches. The *Galilee* and *Carnegie* together covered 224,449 nautical miles to September, 1916, during which time there were obtained 2,054 declination results and 1,481 dip and intensity results. The British Admiralty has issued a map in three sheets upon which are shown the lines of equal magnetic variation for the world for 1917, together with lines of equal annual change.

Among the notable articles in periodicals during the year may be mentioned: J. P. Ault, "Preliminary Results of Observations on the *Carnegie*, November, 1916, to March, 1917" (*Terres. Mag.* Sept., 1917); Emile Belot, *Sur l'Origine Possible du Magnetisme Terrestre* (*Comptes Rendus*, No. 14, 1916), and *Tracé Provisoire de la Courbe Décrite par le Pole Magnétique Boréal depuis 1541* (*ibid.*, No. 2, 1917); H. Arctowski, *Positions Héliographiques des Taches Solaires et Orages Magnétiques* (*ibid.*, No. 3, 1917); S. Chapman, "The Influence of Solar Activity on the Lunar-diurnal Magnetic Variation" (*Terres. Mag.*, June, 1917); Charles Chree, "Magnetic Activity and Hourly Ranges" (*ibid.*); D. L. Hazard, "Activity of the Earth's Magnetism" (*ibid.*); Otto Klotz, "Magnetic Results [in Canada], 1916" (*Jour. Roy.*

Astron. Soc. Canada, July-Aug., 1917); Ad. Schmidt, *Ergebnisse der magnetischen Beobachtungen in Potsdam und Seddin in den Jahren 1900-1910* (*Veröff. der Kön. Preuss. Met. Inst.*, 1916); S. G. Starling, "The Equilibrium of the Magnetic Compass in Aeroplanes" (*Philos. Mag.*, Nov., 1916); C. A. Chant and W. E. W. Jackson, "The Great Aurora of August 26, 1916" [and the Accompanying Magnetic Storm] (*Jour. Roy. Astron. Soc. Canada*, Jan., 1917); Charles Chree, "The Magnetic Storm of August 26, 1916" (*Proc. Roy. Soc.*, No. A 649, April 2, 1917); C. C. Trowbridge, "The Focus of the Auroral Streamers on August 26, 1916" (*Science*, Nov. 17, 1916); Carl Störmer, "Corpuscular Theory of the Aurora Borealis" (*Terres. Mag.*, March and Sept., 1917).

GEOGRAPHY

PHYSICAL GEOGRAPHY OF LAND AREAS

WALLACE W. ATWOOD

The Field of Physical Geography.— The field studies and the late publications in physical geography indicate an increasing interest on the part of geologists in working out the physiographic stages in the history of each region investigated. Many investigators of ore deposits are giving careful attention to physiography because of the important influence of surface changes in the secondary alteration of ore bodies. A small party has been at work in the Piedmont Belt in the southern states searching for manganese deposits in the remnants of an ancient peneplain, a direct application of physical geography to a problem in economic geology. Another group of investigators is interested in the application of geography to various human affairs, and in this investigation, physical geography plays a large part. These three factors of climate, natural resources and physiography have influenced the evolution of all life on the earth, and human history cannot be correctly interpreted unless consideration is given to their influence. More than ever before emphasis is being laid on the significance of geography in determining international conditions, and we are finding that our commercial and diplomatic relations demand a fuller appreciation of the conditions under which the different peoples of the world live.

As a result of the state of war the U. S. Geological Survey has been called upon to make many new maps which will express clearly the physical features of the land (see also IX, *U. S. Geological Survey*). The Army has increased its instruction in the making and interpretation of relief maps, and hundreds of those in the profession who have been able to assist in that work have had ample opportunity for service. The physical geography of Europe has had an immediate and very important influence upon many of the operations in the war, and the geographical periodicals have contained many excellent articles bearing upon this theme. Those in the *Geographical Review*, published by the American Geographical Society, have treated the subject directly. The most notable and most timely contribution of the year is D. W. Johnson's book on Topography and Strategy in the War. This book is an analysis of the topography of each of the most important theatres of war, with emphasis upon how military operations have been influenced by the surface features of the country. The topography of the Western Front and its relations to geologic structure are clearly described and well illustrated by various maps and diagrams. The strategic significance of the great east-facing escarpments of the Paris Basin, the gorges of the Meuse and the Moselle, are clearly indicated. The strategic importance in the site of Verdun, of the great wind gap at Toul, of the gentle westward slope and steep eastward slope of the Voges Mountains, are explained and described. The four routes from Germany towards Paris are each described in detail.

Each of the campaigns in East Prussia is followed in some detail. The strategic significance of the Carpathian Mountains, the Podolian Plateau, the Polish Plain, and the hill and lagoon country bordering the Baltic is presented. On the Italian Front the Austrians are seen to have a great advantage as they possess most of the rough country which serves as a bulwark against Italian aggression, and makes it possible for the Austro-German army to sweep down upon the Italian Plain, with the help of gravity and with a minimum of difficulty. However, the parallel rivers flowing to the lagoon belt at the margin of the Adriatic form natural defences against Austrian invasion, and they have been utilized by the Italians in holding back the invading armies.

The topography of the Roumanian and Balkan Fronts is also analyzed from the standpoint of its military significance.

A report on the Navajo Country, published as Professional Paper 93 of the U. S. Geological Survey and prepared by Herbert E. Gregory, includes an excellent description of the physical features of the eastern portion of the Colorado Plateau. The field studies did not make it possible to solve the problems of physiographic sequence in this remarkably interesting region. There is a wealth of excellent material in this report, and its illustrations add greatly to its value.

The Andes of Southern Peru.—After extensive field studies on the Yale Peruvian Expeditions Dr. Isaiah Bowman has prepared an exhaustive report, illustrated with many maps and photographs, on *The Andes of Southern Peru* (New York, Holt, 1916) which is a very notable contribution to geography, both human and physical. The first part of the book reflects very happily the tendency among most geographers to broaden their field observations so as to include the influence of geographic factors upon human affairs.

The Andes of southern Peru consist of a western, or maritime, cordillera, which is, for the most part, volcanic in origin, a series of extensive plateaus, and the eastern Andes, or Cordillera Vilcampampa. The lofty mountains in these ranges are among the most picturesque in the world. If the waters of the Pacific Ocean were withdrawn from the western border of South America, these peaks would have an elevation of 40,000 ft. They are probably the most abrupt and precipitous mountains bordering an abysmal portion of the sea in any part of the world.

The high plateaus consist in part of broad upland areas of slight relief which were developed through long periods of erosion; when developed they were near to sea level. Such surfaces, known as peneplains, are well illustrated southwest of Cuzco and in the Anta Basin northwest of Cuzco. They form the *punas*, or great upland pastures of the Peruvian Andes. At elevations of less than 14,000 ft. certain of these broad, upland plateaus in which the soil is fertile are cultivated, and locally that cultivation is carried on in a very intensive fashion. There are many upland slopes in these mountains which are mature. They represent the stage preceding the great peneplain stage of erosion when the valleys are broad and open and the inter-valley ridges well rounded. In southern Peru such surfaces are well represented about Antabamba. There are other great plateaus which are of volcanic origin. They have been built up by the successive outpourings of lava which in some instances number up to more than 100 distinct flows.

This portion of South America was in part, if not entirely, beneath the sea during Cretaceous time. The great uplift and deformation occurred near the close of the Cretaceous or early in Tertiary time. The development of the upland surfaces of mature topography and of peneplain topography was accomplished by the close of early Pliocene time, and then another great mountain-making movement affected the region. The erosion surfaces, with the mountains which rose above them as monadnocks, were uplifted at least a mile. The streams were all quickened in their activity, and a series of remarkable canyons, some of which are 7,000 ft. deep, have since been developed. In the high mountains there were numerous glaciers during the Pleistocene period, and that ice carved out huge amphitheatres or cirques near the mountain tops, gave to each of the canyons which they occupied broad, open, U-shaped forms, and upon retreat left morainic deposits which clearly record their former extent. The streams are now exceedingly vigorous, flowing as almost continuous rapids to the sea on the west or to the lowlands on the east. The forms of the canyons and the activities of the streams indicate extreme youth. The region is presumably still rising. In certain of the upland canyons there are pasture lands, and where the valley bottoms are sufficiently broad, those lands are cultivated. Even from the earliest known occupation of this region by man the lower slopes of the canyon walls have been terraced and cultivated.

The Rocky Mountains of Colorado.—In the study of the central portion of the Rocky Mountains west of Denver and centering in Gilpin County, Col., Edson S. Bastin and James M. Hill have worked out the physiographic history of a very interesting region (U. S. Geol. Surv. Prof. Paper 94). The great mountain-making movements which uplifted this region began in, or just before, Tertiary time. They were the result of compression along east-west lines. The growth of the mountain ranges, however, resulted not from a single simple compressive movement, but was due to several such movements separated by periods of quiescence and modified by volcanism. Some movement may still be in progress.

A long period of uninterrupted erosion appears to have followed this mountain-making movement. During this period of erosion the sediments and the volcanic rocks which overlie the mountain mass were largely removed, and in early Tertiary times the region was worn down to a surface of slight relief. Upon this peneplain there are certain mountains which rise as monadnocks. Portions of the ore bodies that had been buried were uncovered by erosion and subjected to oxidation and downward enrichment through the influence of atmospheric and meteoric waters. These alterations in the ores have been going on continuously up to the present day. Late in Tertiary time there was a renewal of uplift in this region which stimulated all the streams to renewed activity. The old erosion surface was lifted and became a plateau into which the streams cut deep gorges. During Pleistocene time climatic changes brought about glacial conditions in the high mountains, and the records of two distinct periods of glaciation have been recognized. Very little change has taken place since the melting away of the glacial ice.

The Mackay Region of Idaho.—In connection with the study of certain mining camps in southern Idaho, Umpleby has given special attention to the physiographic stages which that country has passed through, and has found the physiography very helpful in determining the geologic dates in the history of the ore deposits (U. S. Geol. Surv. Prof Paper 97). The Mackay region is a highland area of profoundly folded rocks traversed by a complex system of high valleys, most of which lie athwart the structural axes. The summit of the uplands is interpreted as the southward extension of an ancient and uplifted peneplain well represented in central Idaho and western Montana. Near the end of the Cretaceous period great crustal movements raised the surface of this district to an altitude of several thousand feet, initiating a period of rapid erosion. By the end of Eocene time the lands had been reduced to a surface near the base level of erosion and probably about 1,000 feet above sea level. Late in the Eocene or early in the Oligocene this lowland was raised to a height near the present summit level, a total uplift, possibly as a continuous movement but more likely as a succession of movements, of about 10,000 ft. The streams were again rejuvenated, and the larger ones developed broad deep valleys. Some of these valleys were partially filled, later in the Tertiary time, with lava flows. Others in which drainage was blocked were the sites of lakes, and during Miocene and Pliocene times these lakes were in part filled with alluvial waste from the neighboring mountains. Later valleys, as much as 4,000 ft. deep, were carved in the Miocene rocks, and afterward shaped by mountain glaciers. Issuing from the glacial ice there were large streams which deposited vast quantities of loose debris in the valleys. These outwash deposits now appear as alluvial terraces.

The Detroit Region of Michigan.—In the Detroit Folio (No. 205) of the *Geologic Atlas of the United States* La Forge has presented a statement of his interpretation of the physical features in the lower peninsula of Michigan and neighboring areas. This entire region is so heavily mantled with glacial drift that there has been little effort to work out the physiographic stages and relate the history to that of the great Appalachian province. Since the close of the Palæozoic era the region has been undergoing denudation by the weather and by streams or has been subject to continental glaciation, by which the surface has been lowered hundreds of feet. By the close of the Mesozoic era it was practically reduced to a nearly featureless plain lying near to sea level.

The highest parts of the bed-rock surface in the lower peninsula, both in the Northern Upland and in the Thumb Peninsula and the general upland bed-rock surface of the Allegheny Plateau in Indiana, and western and southern Ohio, are regarded as remnants of this old and nearly base-level surface or peneplain, which is tentatively correlated with the Highland Rim peneplain of Tennessee.

Near the beginning of Tertiary time the region was again uplifted several hundred feet and active stream erosion was resumed. This erosion cycle lasted until a considerable part of the surface was reduced nearly to a new base level. This lower peneplain is now represented by the bed-rock surface of the Erie-Huron Plain and by lowlands in central Indiana. The first cycle was so nearly completed that the streams flowed in courses commonly independent of rock structure. In the second cycle the work of erosion was chiefly in the less resistant beds, but the main stream cut down so rapidly that they held their courses across the rock structure. The younger or second erosion cycle was terminated by a renewal of uplift, probably in late or middle Tertiary time. The streams began again to deepen their valleys, and this process was going on when interrupted by the advance of the great Pleistocene ice sheet which formed in Labrador and moved southwestward into this region. As the ice advanced into the lower peninsula of Michigan the great lobes were guided by the pre-glacial drainage lines. The erosion accomplished by the Erie lobe helped to form the depression where Lake Erie now rests. The Huron and Saginaw lobes gouged out the basins where Lake Huròn and Saginaw Bay now are, the Thumb Peninsula was an interlobate area, and on the west of the peninsula the Michigan lobe deepened the trough of Lake Michigan. The drainage from the melting ice escaped freely to the south and found a way to the Mississippi River, but later, as the ice sheet retreated, turned into the basin of the St. Lawrence. Associated with the retreat of the ice lobes was the interesting history of the Great Lakes, which has been so fully worked out and published by other writers.

Atlas Photographique des Formes du Relief Terrestre.—Part 2, Series 1, of the *Atlas Photographique des Formes du Relief Terrestre*, prepared under the direction of an international commission, appeared during the year, much delayed in publication because of the war. This part contains ten and one-half excellent plates, illustrating land forms produced by running water, representing the coöperation of 13 authors. Some show the deep, sharp, V-shaped canyons, and others waterfalls and cascades characteristic of early stages in a cycle of erosion. The views illustrate conditions in various parts of the world. Two of them have been chosen from North America. One is the gorge of Fall Creek near Cornell University, described by Dr. Lawrence Martin, and the other is the canyon of the Yellowstone, showing the lower falls, described by the writer.

Other Investigations.—Emmanuel de Martonne of the University of Paris has published an article on "Physiographic Features controlling Human Geography in the Carpathians" in the *Geographical Review*. Two excellent articles on "*L'Epoque Glaciaire dans la Péninsule Balkanique*" by J. Cvijic have appeared in the *Annales de Géographie.* They are based upon careful field studies, and present, with the help of pen and ink sketches, very good descriptions of the features due to glacial erosion and glacial deposition in the Balkan Peninsula during two distinct epochs of Alpine glaciation. The stages in the retreat of the last glaciers are clearly marked even to the small remnants or cirque glaciers.

The remarkable crescent-shaped sand dunes of the Peruvian desert have been described by W. S. Barclay in the *Geographical Journal.* These dunes travel southeastward across the great Pampa Del Sacramento at the rate of about 300 ft. per year. They cross obstructions through the lower passes, reform, and continue their march. A few wheelbarrow loads of gravel turned on their backs, however, will lead to their destruction through breaking the rhythmic advance of the little sand ripples and hastening erosion. This method is used by the section hands of the railroad to prevent the dunes from crossing the tracks.

OCEANOGRAPHY

G. W. Littlehales

Observations in the North Atlantic.—The President of the United States has appointed representatives of the Coast Guard, the Hydrographic Office, the Weather Bureau, the Bureau of Standards, and the Bureau of Fisheries to conduct the oceanographical and meteorological observations forming the scientific programme of the International Ice Observation and Patrol Service in the North Atlantic Ocean. The plan of oceanographical operations comprises hydrographical sections, to be repeated for three years, from New York to Halifax and from Halifax to a central position on the Grand Bank of Newfoundland, whence radial sections will pass northwestward to St. Johns across the Labrador Current and eastward and southward to the Gulf Stream; and, after these, the running of lines of observations from the northern extremity of Newfoundland to the southern extremity of Greenland. Although the state of international relations did not admit of pursuing this undertaking in 1917 by the vessels of the Coast Guard, hydrographic stations in the Atlantic coast waters of the United States continued to be occupied by the Bureau of Fisheries schooner *Grampus.* During these operations samples of sargassum weed were obtained for analysis in regard to the possible use of this material as a source of potash, and possibly of iodine and bromine.

Bureau of Fisheries Document No. 833, published in the spring of 1917, sets forth the oceanographical observations made in crossing the Gulf Stream from Chesapeake Bay to Bermuda, and in recrossing thence to the Bahamas, and also in critical crossings of the Straits of Florida. The discussion of those observations, which were made under the direction of the Bureau of Fisheries in the Coast and Geodetic Survey steamer *Bache* during the period from January to March, 1914, is by Prof. Henry B. Bigelow of the Bureau of Comparative Zoölogy of Harvard University, who has been enabled to make an addition to oceanographical knowledge by finding that, in the middle depths of the western Atlantic, the salinity, like the temperature, is highest to the westward of Bermuda, and that the salinity of the Atlantic waters flowing over the sills which constitute the bottoms of the passages into the Caribbean Sea and thence over the bottom of the Yucatan Channel into the Gulf of Mexico remains, like the temperature, unaltered in the transit. In the profiles of the Straits of Florida, the distribution of the lines of equal values of the salinity, the temperature, and the density plainly show the influence of the earth's rotation in deflections to the right-hand side of the moving mass of water and the consequent rise of the colder and less saline bottom waters on the continental slope of Florida. Neither here nor at any more northerly place of observation has any evidence been found to support the former view that an "Arctic" current moves southward along the continental border.

Biological Investigations.—Biological oceanography, for the full fruition of which organized and long continued observations at sea are indispensable, has been enabled, through the marine laboratories on the Atlantic and Pacific coasts, to show yearly an increasing acquaintance with the abounding life of oceanic waters into which, up to recent times, the naturalists' collecting utensils had not been cast. The results of these researches, while they are always informational, often bring out, through the causal explanations furnished, a coincidence of interest with research applied to economic ends. Of this there is a present instance in the search for knowledge of the life habits of the long-finned albacore, the fish that is coming to be widely and favorably known as canned tuna.

CARTOGRAPHY

W. L. G. Joerg

Map of Europe, 1:1,000,000.—The important map of Europe and the Near East on the scale of 1:1,000,000 compiled by the Royal Geographical Society of London under the direction of the General Staff (*A. Y. B.*, 1915, p. 607; 1916, p. 608) has continued to make rapid progress. Nineteen sheets have been issued since our last report, bringing the present total up to 46. The new sheets cover mainly west-central Russia, Finland and northern Scandinavia, with scattering sheets along the Latin Mediterranean littoral and in the Caspian region. North of 60° north latitude the unit of size of each sheet has been expanded; these sheets extend over 12 degrees in longitude (instead of the usual six) and four degrees of latitude. The new sheets are: R-33 and 34 (Lofoten and Tromsö), R-35 and 36 (Nordkap and Romanov), Q-35 and 36 (Uleaborg and Kem), P-33 and 34 (Gäfle and Abo), P-35 and 36 Helsingfors and Petrozavodsk), O-33 (Kalmar), O-36 (Petrograd), N-30 (Edinburgh), N-31 (Amsterdam), N-36 (Smolensk), M-30 (London), M-36 (Kiev), L-36 (Odessa), K-31 (Marseilles), K-32 (Florence), K-38 (Tiflis), K-39 (Baku), J-33 (Palermo), I-39 (Teheran). On sheets P-, Q-, and R-35—36 appears what is probably the largest-scale representation at present generally available of the new Russian railroad from Petrograd to Catherine Harbor which has afforded Russia an ice-free outlet to the sea open all the year round.

Population Density Map of Alsace-Lorraine.—A timely map, 1:800,000, accompanies a recent admirable work by P. Vidal de la Blache, the dean of French geographers (*La France de l'Est: Lorraine-Alsace*, Paris, Armand Colin, 1917). It shows the population density of Alsace-Lorraine and the adjoining *départements* of France by cantons according to the French census of 1911 and the German census of 1910. This brings out strikingly the population foci around Strassburg, Mülhausen, Belfort, Nancy, Metz, Thionville and the iron ore districts of Briey and Longwy. It also illustrates the fact that in population grouping, as well as in economic conditions and race, the valley of the upper Moselle belongs to France.

Map of the Natural Political Divisions of England.—A suggestive attempt is made by C. B. Fawcett in the *Geogr. Journal* for February, 1917, to resubdivide England into administrative divisions that are natural. The postulate of the inquiry is that after the war the question of transforming the United Kingdom from a unified into a federal state, with local government for each unit, will again become urgent. Proceeding from the sound premises that the boundaries of the future provinces should not disrupt areas of continuous dense population, that each province should have as capital the city which most nearly constitutes the nucleus of its activities, that the population of each province should be large enough to justify self-government and yet not so large as to dominate the federation, and that historical traditions should be taken into account, Mr. Fawcett suggests the following subdivisions (map in 1:2,500,000), the population, area, and suggested capital being given in each case: North England (2,700,000 population; 5,400 sq. miles; Newcastle); Yorkshire (3,800,000: 5,100; Leeds); Lancashire (6.100,000; 4,400; Manchester); Severn (2,900,000; 4,700; Birmingham); Trent (2,-

100,000; 5,500; Nottingham); Bristol (1,300,000; 2,800; Bristol); Cornwall and Devon (1,000,000; 4,100; Plymouth); Wessex (1,300,000; 2,900; Southampton); Southeast England (1,700,000; 3,000; Brighton); Central England (1,200,000; 4,100; Oxford); East England (1,600,000; 6,000; Cambridge); London (7,700,000; 2,000; London).

Physiographic Map of the Carpathians.—An innovation in its field is Emmanuel de Martonne's "Physiographic Map of the Carpathians," 1:2,500,000 (*Geogr. Rev.*, June, 1917). No such elaborate representation of the different physiographic types of a region has heretofore been attempted. No less than 43 symbols are used to cover the range of phenomena occurring in the great mountain arc which constitutes the Carpathians and which extends from the Danube at Pressburg to the Danube at the Iron Gates.

Map of Native Dwelling Types in Algeria.—An interesting map, 1:2,500,000, by Augustin Bernard and Edmond Doutté, in the *Annales de Géographie* for May 15, 1917, shows the distribution of native dwelling types in the rural districts of Algeria, based on an official census in 1911. The native dwellings consist of two kinds, the movable and the fixed. The former are the tents, the home of the pastoral nomad of the interior. The fixed dwellings are mainly confined to the coastal zone and consist of four types—*gourbis*, terraced houses, tile-roof houses, and European houses. Of these the *gourbi*, a thatch-covered hut, is the typical dwelling of the agriculturist; the terraced house, of the fruit-grower.

Vegetation Map of the United State.—An important vegetation map of the United States, 1:9,600,000, by Forrest Shreve, the best and most detailed so far published, appeared in the *Geographical Review* for February, 1917. The basis of classification is that of physiological plant geography. Eighteen types of vegetation are distinguished, seven of desert and semi-desert, three of grass land, two of open park-like forests, and six of ordinary forests.

Atlases.—Three new atlases are worthy of comment, because they differ from the usual type of atlas, which contains almost nothing but politically colored maps satisfying only purely locational needs. The first is a "War Atlas" forming part of the *History and Encyclopædia of the War* being published in instalments by the *London Times*. All of the war areas are shown on physical maps, *i.e.*, maps showing relief in altitude tints. The western theatre is on the scale of 12 miles, the eastern and Italian theatres of 22 miles, to the inch. The Balkans, Egypt, the Near and the Far East, and the German colonies in Africa are likewise included.

Important because an innovation representing an advance in American cartography is the *Geographical Manual and New Atlas* by C. O. S. Mawson (New York, Doubleday, Page, 1917). Its distinctive feature is the inclusion of maps showing the different phases of the geography of a region. Thus there are physical, climatic, vegetation, population density, and economic maps of each continent. Other features of special interest are racial maps of Europe, large-scale physical maps of the European battle areas, and state maps showing automobile routes. A supplementary text of some 130 pages reflects familiarity with the spirit of modern geography. The chief drawback of the publication is that the maps, as is customary with commercial maps in this country, are wax-engraved, a process which does not satisfy the requirements of refinement and pleasing appearance as does lithography, the method by which scientific maps in this country and generally all maps abroad are produced.

An atlas completely geographical in conception is *The Advanced Atlas of Physical and Political Geography* by J. G. Bartholomew (London, Oxford University Press, 1917). Intended for the student of geography, it reverses the make-up of general atlases and contains practically no merely locational maps. Physical maps form the mainstay of the work, and all other aspects of geography are represented. The physical maps represent relief by the method of altitude tints alone, without the addition of hachures, or slope lines. This tends to a certain abruptness, a layer-like effect which does not do justice to the accidents of the terrain, sometimes of critical importance, which may occur between contour intervals, a defect which can be remedied by the combined use of both methods. Nevertheless, where the contour interval is sufficiently small, as in the map of the British Isles, the picture is remarkably effective.

EXPLORATION AND GEOGRAPHICAL RESEARCH

Cyrus C. Adams

Arctic Exploration.—The southern division of Vilhjamur Stefansson's Canadian Arctic expedition, in command of Dr. R. M. Anderson, as reported in the Year Book for 1916 (p. 611), explored the northern coast of Canada between Cape Parry (long. 124° W.) and Kent Peninsula (108° W.), extended the surveys inland about 100 miles, and covered parts of Victoria Island. Anderson reports (*Geogr. Rev.*, Oct., 1917) that the west branch of the Mackenzie River has a channel at least six feet deep through the shoals at the entrance into the deep water of the river. The depth of the east branch channel is about the same. The Mackenzie provides an immense waterway southward as far as Great Slave Lake for boats drawing not over six feet. This Arctic region does not yield so much fur as the wooded country farther south. In recent years, however, the advance of the fur trade into the north has been rapid. An interesting feature of the Coronation Gulf region is the migration of the Barren Ground caribou from the mainland north to Victoria Island in April and May and the southward migration in November. The rate of slaughter of the caribou is increasing and the musk ox are being depleted rapidly. The northern limit of spruce trees is about 20 miles from the coast, with a few stragglers farther north. Willows of good size are found in many places north of the tree line, and they persist until they dwindle to small ground-creeping shrubs on the northern islands or wind-swept coast. To the west, there are no trees near the coast until Franklin Bay is reached, where there is spruce of fair size 10 or 15 miles inland in the valley of the Horton River. Spruce comes rather close to the coast on the Anderson River. Still farther west is a great northward extension of timber in the Mackenzie delta, fair-sized trees occurring nearly to Richard Island, about 150 miles north of the Arctic Circle. On the Horton and Coppermine Rivers, and to a less extent farther west, spruce trees were found near the northern limits of timber, 90 per cent. of which were dead. Practically all the dead trees showed traces of the ravages of bark beetles.

A survey was made for some distance of the Croker River. Its apparent size at the coast, where it spreads into a wide delta, is larger than the actual volume of the river bears out; for about five miles from the coast it averages only about 60 yds. in width. A large copper-bearing area discovered in the Bathurst Inlet was surveyed and mapped. It covers most of Banks Peninsula and the western mainland shore from the mouth of Hood River to Moore Bay, extending as much as five or six miles inland. Nearly all of the rocks are impregnated with native copper, and O'Neill estimated that two billion tons of rock in which copper was actually seen was well within the limit. Fish are abundant everywhere. Large salmon trout, white fish, lake trout and frost fish are very numerous. Northern fish, as a rule, are of excellent quality.

The relief steamer *Neptune* reached Sydney, Cape Breton, on Aug. 26, with the members of the Crocker Land Expedition. All were well. MacMillan, leader of the expedition, reported a sledge trip he made in the spring of 1917 along the eastern coast of Ellesmere Land from Cape Sabine to Clarence Head. Inglefield, Kane and Hayes had made rough surveys or sketches of this coast but their work was based on observations from the decks of vessels, often by means of distant sights, as ice prevented a close approach to the shore. MacMillan was able to correct a number of these inaccuracies. He made his journey with three Eskimos and dogs drawing the sledges.

In 1912 the Russian explorer Brussiloff, a lieutenant in the Russian Navy, sailed north in his ship *Saint Anne*, for Arctic exploration (*A. Y. B.*, 1913, p. 641). He passed into the Kara Sea through the Yugor Shar, the strait north of Russia which is one of the two passages that have been used in recent years by commercial vessels in the trade between the United States and the mouths of the Obi and Yenissei Rivers. Hugging the west shore of the Yamal peninsula to avoid the ice, the explorer pushed his way north until he reached a point a little to the north of the east end of Franz Josef Land, whence came the last tidings from the party. It is known that Brussiloff's vessel drifted in a general northerly direction, though with some divergences, to beyond 82° N., after which the drift was generally west to the north of Franz Josef Land. Charles Rabot, the well-known writer on the Polar regions, says in *La Géographie* that the ship was probably carried across the north Polar area and if she was not crushed by the ice on the way she may possibly reappear, as was the case with some of the relics of the *Jeannette*, on the east coast of Greenland.

The practicability of the sea route to Siberia through the Kara Sea is now regarded as established. For the fifth successive year Jonas Lied conducted a successful trading voyage in 1916. The *Edam* took out a miscellaneous cargo from England and returned with a load of Siberian produce. She started rather late and encountered ice 150 nautical miles west of Kara Strait. The water was fairly open in the northern Kara Sea but heavy ice was again met near the Yamal Peninsula. The wireless stations now in the Kara Sea are a valuable aid to the navigation of these waters, as they often advise ships of the position of open or ice-obstructed sea areas. It is worth mentioning that on a recent occasion war news sent by wireless from Tsarskoe Selo, near Petrograd, was read at Dickson Island, nearly 74° N. lat., before it appeared in the Petrograd papers. This Arctic wireless station has a force of eight men who remain there the year around.

A press report published in the *New York Times*, dated Melville Island, Alaska, Feb. 17, *via* Fort Yukon, Dec. 26, contains a belated message from Vilhjalmur Stefansson, reporting discoveries made in the summer of 1917. Previous word from Stefansson, dated January, 1916, was mentioned in the YEAR BOOK for 1916, page 611, and announced his failure in that year to reach and explore the land he had discovered. It appears from the most recent reports that the exploration has been accomplished successfully.

Stefansson announces the discovery of a "second" land, the southwest corner of which is in lat. 79° 50′ n., and long. 102° w. The northern tip is near lat. 80° 12′ n., and long. 100°. The southeast point is about lat. 79° 46′ n. and long. 99° w. Several smaller islands were found in a strait between this "second" land and Heiberg Island.

On Aug. 3 a "third" land was discovered, the southern tip of which is approximately lat. 77° 9′ n., long. 107° w. The north tip is near lat. 77° 55′, and long. 108° 10′. Stefansson spent from Aug. 9 to Sept. 9 on this "third" land, then going south around Capes Mackay and Beuckat, reaching Cape Murray on Sept. 23. A hunting party on Liddon Gulf was reached on Oct. 16, with no hardships during the trip. A lignite coal deposit was found near the hunting camp.

A second dispatch from Herschell Island, Nov. 10, *via* Yukon, Alaska, Dec. 26, states that in the Spring of 1917 the party left the land near lat. 78° 30′ n. and long. 110° w., and reached a point 140 mi. north-northwest. On the night of Sept. 13 the vessel went aground, and was not afloat again until Sept. 27, which made it too late for an attempt to go around Point Barrow.

Stefansson records the loss of the lives of Captain Beneard, of the *Mary Sachs*, and Thompsen, probably a member of the crew, while attempting to carry mail from Camp Kellett, in the fall of 1916, to Melville Island.

Antarctic Exploration.—The YEAR BOOK for 1916 (p. 611) reported the safe return of Sir Ernest Shackleton's Weddell Sea party. It was necessary, however, to send relief to his Ross Sea expedition, for its ship, the *Aurora*, had broken from its moorings in Ross Sea and drifted with those on board to New Zealand, leaving 10 men stranded in the Ross Sea region. Sir Ernest Shackleton reached New Zealand in time to sail with the relief party on the *Aurora*, which made a quick return journey and arrived at Cape Evans on Jan. 10, 1917. It was found unfortunately that in their isolation of 20 months three of the Ross Sea party had died, Capt. MacIntosh, the leader, A. P. Spencer Smith and Victor G. Hayward. The task of this party was to lay depots on the Ross Sea barrier ice for the use of Shackleton when he came down from the Antarctic Plateau on his way over the continent from the Weddell Sea. This duty was faithfully performed. Supply depots were laid as far south as the foot of Beardmore Glacier, 1,500 miles from the starting point. Here Shackleton expected to find his first depot as he descended from the continent, but, as we know, he never reached the continent, his plans having been frustrated by the sinking of his ship in Weddell Sea (*A. Y. B.*, 1916, p. 610). On its march back north the party suffered severely from scurvy, which made their progress slow. Spencer Smith finally died of the disease, and MacIntosh and Hayward, feeble as they were, broke through thin ice and were drowned when only 15 miles from the base camp of the expedition at Cape Evans. These three men are all who perished in the Weddell Sea and Ross Sea expeditions, each a part of Shackleton's remarkable undertaking in the Antarctic.

South America.—Dr. Hamilton Rice returned from his latest expedition to South America in January. He found on ascending the Amazon to Manaos that various hills fringing the Amazon are not of volcanic origin as had been supposed. In his ascent to Iquitos, the head of navigation on the Amazon, he obtained wireless signals almost nightly from Washington and secured good observations for latitude and time. The navigable course of the Amazon, he says, varies greatly from year to year. A series of charts covering a number of consecutive years would show the tremendous activity of the river, due to its immense volume, the quantity of detritus it carries, and the quality of land through which it flows. Here lateral erosion and fluvial activity may be studied on a stupendous scale. Dr. Rice also steamed up the Rio Negro, one of the large northern tributaries of the Amazon. He attaches great importance to the correct mapping of this river as a basis for the mapping of the more remote regions. A complete survey of the Rio Negro, however, is difficult on account of its enormous width and the great number of shoals and sandbars. The river proved to be exceptionally low, and Dr. Rice finally had to confine himself to tracing the generally unknown northern bank, with cursory examinations of the hitherto unknown rivers Cuceras, Apiahu and Curiahu.

Africa.—The French Colonial Office and the Geographical Society of Paris have been investigating the economic possibilities of the large region between the Senegal and Niger Rivers. This region is crossed by a railroad from Kayes, at the head of steam navigation on the Senegal River, to Bammako, at the head of navigation on the Niger. M. Chudeau, the well known explorer, had charge of the work. His report as to the prospects of irrigation and a large development of agriculture is most favorable. Farther to the northeast, in the Timbuktu region, Lake Fagibin, nearly desiccated in recent years, has been almost completely refilled, thanks to adequate engineering works and the winter flood of 1915. This means much for the future of the cattle industry, for this region will be one of the great cattle-raising areas. About 100,000 head of cattle are now brought to market annually from the northern edge of the forested zone in the south. It is expected that this wide cattle belt will become one of the great future sources of meat exports to France. One cold-storage and packing plant has already been established.

German Southwest Africa, Germany's first African colony, had been only superficially explored and was supposed to be of little value until long after Germany took possession of it in 1883. Careful study of the entire region was made after the Union of South Africa conquered the colony early in the war. The results of this investigation were summarized in William Eveleigh's *Southwest Africa* (London, 1915), in which the conquered colony is disclosed as a region where a considerable white population may be healthy and enjoy fair prosperity. Minerals, pastures and agricultural lands are the three natural sources of wealth. The diamond fields, where gems are dug out of the unconsolidated sands near the sea, may not be exhausted for twenty years. No one knows how the diamonds got there, but the most likely theory is that of Dr. Wagner, who believes that the parent rock of the diamonds lies submerged off the present coast. It is likely that copper ores will yield richly for many years to come. Tin and marble are also becoming important. Much farming may be carried on in the comparatively humid northeastern part of the country, and the grazing lands can carry some millions of cattle and sheep.

Exploration at High Altitudes.—In a paper read before the Royal Geographical Society Dr. A. M. Kellas says that the triangulation of the great mountain ranges of Asia and America would require the service of men who are able to ascend and find their way among any mountains. Mt. Everest, according to the latest determination of the Indian Survey, is 29,141 ft. high. Dr. Kellas has made a long study of the possibility of supporting life at very high altitudes. The effects of balloon ascents to altitudes above 25,000 ft. have shown that the ascent of Mt. Everest without adventitious aid would be impossible if the physiological conditions of mountaineers and balloonists are comparable. In recent balloon ascents oxygen has been used with success, and this may suggest that the ascent of Mt. Everest would be possible if air enriched with oxygen were breathed during the latter part of the climb. The actual quantity of oxygen used in effective work depends on the training of the individual, the trained man requiring far less oxygen than the untrained because his muscular coördinations are arranged for maximum economy. Many of the greatest Himalayas present such physical difficulties that climbers will probably not attack them until the effects of altitude are better understood. The greatest heights yet reached are 24,600 ft. by the Duke of the Abruzzi and 24,000 ft. by Norwegians on Kabru, one of the mountains nearest Darjeeling.

Affiliation of American Mountaineering Clubs.—The chief mountaineering clubs in the United States have formed a central organization with headquarters in New York City, to be known as the Bureau of Associated Mountaineering Clubs of North America. LeRoy Jeffers, an official in the New York Public Library, is its first secretary. The Bureau will supply information to the members of the several clubs, over 10,000 in number, and collect a central library of mountaineering literature and photographs and other views of mountain scenery. A good beginning has already been made at the New York Public Library, where the library of the American Alpine Club also has been deposited.

XXIII. CHEMISTRY AND PHYSICS

CHEMISTRY

INORGANIC AND PHYSICAL CHEMISTRY

ARTHUR WESLEY BROWNE

Hydrogen Peroxide and Ozone.—The formation of hydrogen peroxide has been observed by C. Schall to take place during the electrolysis of malonates and of succinates at moderately low temperatures. G. Schluck has studied the action of tellurium upon hydrogen peroxide. He states that tellurium is dissolved by sufficiently concentrated hydrogen peroxide solutions, with formation of telluric acid. P. Rudnick and R. D. Cooke have found it possible to prepare chloroplatinic acid by treatment of platinum black with concentrated hydrochloric acid, with gradual addition of ordinary 3 per cent. hydrogen peroxide, or of "perhydrol". The action of ozone upon inorganic iodine compounds, such as potassium iodide, in aqueous solution, has been investigated by E. H. Riesenfeld and F. Bencker, in order to determine if possible the number of active oxygen atoms consumed per molecule of ozone. The conclusion is reached that the ozone molecule is to be formulated as O_3, and that there is no reason for assuming, with Harries (*A. Y. B.*, 1912, p. 626), the existence of "oxozone", with the formula O_4. W. Traube has prepared the so-called ozonates of rubidium and caesium, and has studied their decomposition. He has also investigated the change of potassium ozonate into potassium tetroxide.

Nitrogen.—The compounds formed between lead and metallic sodium in liquid ammonia have been studied by F. W. Smyth. W. C. Bray and C. T. Dowell have investigated the reaction between chlorine and ammonia and have made a study of certain reactions of the explosive product, nitrogen trichloride. G. Bruni and G. Levi have prepared numerous ammonates of the silver salts of inorganic and organic acids by saturating these substances with dry ammonia, and analyzing the products obtained. A cyclic theory of the constitution of metal ammines and of the iron cyanides has been proposed by J. A. N. Friend. The action of platinum black, foil, and sponge upon a dilute aqueous solution of hydronitric acid, HN_3, has been studied by E. Oliveri-Mandalà. Colloidal platinum was found to act much less efficiently because of the poisonous action of the acid in this case. Hydronitric acid in small amounts was found to act as a negative catalyst toward the decomposition of hydrogen peroxide by colloidal platinum. The decomposition of alkali or alkaline earth trinitrides (azides) *in vacuo* has been recommended by E. Tiede as a source of pure nitrogen. Lothar Wöhler and F. Martin have investigated the explosive properties of several new fulminates and trinitrides.

Nonaqueous Solutions.—J. W. Marden and Mary V. Dover have determined the solubility at 25° C., of lithium chloride, mercuric chloride, and salicylic acid, respectively, in acetone-benzene, and in ethyl acetate-benzene mixtures; and of mercuric chloride in chloroform-ether mixtures. H. A. Curtis and R. M. Burns have studied the reactions of various inorganic salts dissolved in isoamyl alcohol. The electric conductance of solutions of lead nitrate, cupric acetate, silver sulphate, silver chloride, silver thiocyanate, and silver cyanide, in pyridine at 25°, and in some cases at 0°, has been measured by J. H. Mathews and A. J. Johnson. A preliminary report upon experiments illustrating the development of electromotive force in cells containing a nonaqueous liquid, such as an ethereal solution of an alkyl halide, and provided with one platinum electrode, and one magnesium, zinc, or aluminum electrode, has been made by J. M. Nelson and W. V. Evans. The solution of magnesium in such an electrolyte is said to be analogous to the solution of a metal in an aqueous acid. Liquid chlorine has been used as a solvent by P. Waentig and D. McIntosh in connection with a number of freezing-point determinations performed for the purpose of accumulating data that might throw light upon the constitutional formula of certain oxonium compounds. Toluene, chloroform, carbon tetrachloride, stannic chloride, ether, acetone, ethyl acetate, ethyl alcohol, and methyl alcohol were the solutes used. F. S. Mortimer and J. N. Pearce have measured the potentials of the silver electrode against solutions of silver ions in water, methyl alcohol, ethyl alcohol, and pyridine, and in mixtures of pyridine with each one of the other solvents.

Carbon.—O. Ruff and E. Jellinek recommend as the best method for preparing aluminum carbide, Al_4C_3, the heating of a mixture of the elements in a closed crucible to 2000°C. in an atmosphere of hydrogen. The product will absorb nitrogen rapidly at this temperature with formation of aluminum nitride. A. Stähler has succeeded in synthesizing alkali cyanides by heating alkali carbonates in the electric furnace in contact with nitrogen gas under high pressure. At a pressure of 60 atmospheres, 95 per cent. of the carbonate could be converted into cyanide. By using the electric discharge in an atmosphere of an inert gas such as helium or argon, F. Skaupy has found it possible to effect (1) the dissociation of aluminum chloride, with separation of aluminum, (2) the polymerization of hydrocarbons without charring, and (3) the synthesis of organic nitrogen compounds from mixtures of gaseous carbon compounds and nitrogen gas. In an attempt to discover whether hydrocarbons are actually present in coal, or are merely pyrogenetic decomposition products, A. Pictet, L. Ramseyer, and O. Kaiser extracted 5.5 tons of soft coal (from Maybach) with benzene for four days. They conclude that the coal appears actually to contain the hydrocarbons, and describe the coal as a hydrocarbon material impregnated with a liquid very closely related to petroleum. A. P. Lidoff has described certain experiments in which finely divided carbon in the presence of suitable catalysts seems to have shown the power to absorb nitrogen slowly from the air, with formation of either active α-monocyanogen, which on oxidation yields α-oxane, or inactive β-monocyanogen, which yields β-oxane. This statement, which is of great interest if correct, should for the present be accepted with some reserve. Lidoff believes that α-oxane, which is said to resemble carbon dioxide, frequently accompanies this gas in nature. Density determinations upon the gas obtained from various natural carbonates lead him to the conclusion that many of these minerals contain varying amounts of α-oxane instead of carbon dioxide. The occurrence of carbon monoxide gas in kelp (*nereocystis luetkeana*) has been noted by S. C. Langdon, who analyzed one thousand samples of gas, obtained from the floater of the large Pacific Coast kelp. Oxygen was found in percentages varying from 16 to 23 per cent. (average 18 per cent.), and carbon monoxide one to 12 per cent. (average 4 per cent.). Carbon dioxide was occasionally found, but only in traces. L. B. Richardson has measured the equilibrium pressures in the system carbon dioxide, charcoal, over the range 0 to 300 cm. mercury, at 21 temperatures between -64° C. and 200° C., and in the system ammonia, charcoal, over the same pressure range, between -20° C. and 200° C. The action of sodium dioxide upon the oxides of carbon has been studied by C. Zenghelis and S. Horsch. The equilibrium between carbon monoxide, carbon dioxide, sulphur dioxide, and sulphur has been investigated at 1000° C. and at 1190° C. by J. B. Ferguson. V. A. Plotnikoff recommends, as a means of preparing carbonyl chloride, that a mixture of carbon monoxide and chlorine gas be passed over aluminium chloride at 30-35° C., or into a saturated solution of this salt in chloroform. A. Stock and H. Stoltzenberg have succeeded in preparing carbon suboxide, C_3O_2, by treatment of malonic acid with phosphorus pentoxide. J. A. Hedvall has measured the formation and decomposition temperatures of the carbonates of magnesium, calcium, strontium, and barium.

Adsorption of Poisonous Gases.—I. Guareschi has made an elaborate study of the properties of soda-lime as an absorbent for certain gases, and has published a series of four articles upon this subject. He considers soda-lime to be the most efficient agent for use in combating many of the poisonous, irritating, or tear-producing gases used in modern warfare.

Boron and Silicon.—In connection with a study of boric anhydride and its hydrates, J. E. Myers has found that the hydration of this substance takes place in at least two stages, the first of which, yielding HBO_2, takes place much more rapidly than the second, which yields H_3BO_3. Comparing carbon and silicon with reference to their tendency to form numerous compounds, A. Stock points out that the great superiority of carbon in this direction is probably due to the fact that the affinity of carbon for positive and for negative nonmetallic elements is about the same, while the positive and negative affinities of silicon are very different. Moreover, the four valences are symmetrically distributed in the case of carbon, and not in silicon. About 500 compounds of silicon are now known, apart from the silicic acids and their salts. G. W. Morey has investigated the system water, potassium silicate, silica over a range of temperatures from 200° C. to over 1000° C. Aside from quartz and the compounds with the formulas $K_2Si_2O_5$ and $K_2Si_2O_5.H_2O$, four new compounds appeared as solid phases: $K_2Si_2O_5.H_2O$; K_2SiO_3; $K_2SiO_3.1/2\ H_2O$; and $K_2SiO_3.H_2O$. The density of silicon tetrafluoride has very accurately been determined by A. F. O. Germann and H. S. Booth.

Platinum Metals.—A. Gutbier, in collaboration with various associates, has investigated (1) the oxides of ruthenium, (2) the action of oxygen upon ruthenium, (3) the action of oxygen upon rhodium, and (4) the action of chlorine and bromine upon rhodium. Several representatives of a new class of palladium compounds, the trihalopalladoates, were also prepared, as well as a large number of tetrachloropalladoates, several new derivatives of Vaquelin's salt, and numerous palladodiamine derivatives.

Zirconium, Molybdenum, Vanadium.—E. Chauvenet calls attention to the probable existence of the zirconyl radical in various zirconium compounds. In a series of articles he has reported the results of his investigations upon the zirconyl bromides, fluorides, and sulphates. E. H. Rodd has studied the properties and the constitution of some new basic salts of zirconium, and has prepared tetrachlorozirconyl zirconate. The fusibility of mixtures of zirconia with other oxides has been investigated by O. Ruff and G. Lauschke. G. A. Barbieri has prepared several compounds containing the new radical, Mo^vO_2, containing quinquivalent molybdenum and termed the molybdyl radical. Among the compounds prepared are molybdyl ammonium formate, molybdyl potassium formate, and the two corresponding oxalates. Barbieri has also prepared certain new complex formates of trivalent vanadium.

Radioactive Substances.—The half-life period of ionium has been determined by Stefan Meyer with the aid of measurements of the ionization current per mg. from a thin layer of a thorium-ionium preparation that contained 29.5 per cent. of ionium. The half-life period was found to be 100,000 years, which must be regarded as a maximum value, in comparison with the value (7×10^4 years) found by Soddy. One gram of radium must therefore be in equilibrium with 58 grams of ionium. F. Soddy has announced the result of eight determinations of the atomic weight of "thorite" lead in a sample sent by him to Hönigschmidt. The mean value obtained in these determinations is 207.77. Soddy therefore concludes that varieties of lead are known having atomic weights both higher and lower than that of ordinary lead, and varying from 206.08 to 207.77 (see Richards and Wadsworth, *A. Y. B.*, 1916, p. 616). The stability of lead isotopes from thorium has been discussed by Soddy, by A. Holmes and by J. Joly. T. W. Richards and N. F. Hall have made a very careful attempt to separate the isotopic forms of lead by fractional crystallization of the nitrate. The atomic weight of the end fractions obtained after more than 1,000 crystallizations had been carried out were 206.422 and 206.409. These results led to the conclusion that "the nitrates of radium D and lead on the one hand and radium B and lead on the other hand could hardly be separated, if at all, by less than 100,000 crystallizations. Hence, we might infer that the molal solubilities of the nitrates are probably essentially identical. The outcome gives strong experimental support for the hypothesis that isotopes are really inseparable by any such process as crystallization."

Atomic and Molecular Structure.—On the assumption that all forces involved in the structure of solids and liquids are of a chemical character, and that the phenomena of condensation, evaporation, adsorption, surface tension, and kindred phenomena are manifestations of either primary or secondary valence, I. Langmuir reaches the conclusion that absorbed films on plane surfaces of solids or liquids should have a thickness corresponding to that of one atom or of one group molecule. From a study of the behavior of various oil films upon water a number of very interesting conclusions concerning the length and shape of molecules have been drawn. Both Langmuir and W. D. Harkins have discussed the orientation of molecules in the surfaces of liquids. Harkins, Davis and Clark state the following general law for surfaces: "If we suppose the structure of the surface of a liquid to be at first the same as that of the interior of the liquid, then the actual surface is always formed by the orientation of the least active portion of the molecule toward the vapor phase, and at any surface or interface. The change which occurs is such as to make the transition to the adjacent phase less abrupt". Harkins has formulated a new periodic system for the chemical elements, which shows a relation between the abundance of the elements and the structure of the nuclei of atoms. Important corroborative evidence has been obtained by the examination of 318 iron and 125 stone meteorites. The first seven elements in order of abundance, constituting 98.6 per cent. of the material of the meteorites, were all elements of even atomic number. W. A. Noyes has suggested a kinetic hypothesis to explain the function of electrons in the chemical combination of atoms. On the assumption that the average velocity of the electron is about 60 times that of the hydrogen molecule, and that there are certain "valence" electrons, which may be transferred from one atom to another the following statement is made concerning the probable behavior of two atoms during chemical combination: "A valence electron which is rotating around a positive nucleus in the first atom may find a positive nucleus in the second atom sufficiently close so that it will include the latter in its orbit, and it may then continue to describe an orbit about the positive nuclei of the two atoms."

Halogen Compounds.—G. S. Jamieson has prepared double salts of caesium chloride with calcium chloride and strontium chloride. T. W. Richards and W. B. Meldrum have determined the melting points of the chlorides of lithium, rubidium, and caesium, and the freezing points of binary and ternary mixtures of these salts, including also potassium and sodium chlorides. J. Milikan has obtained evidence of the probable existence of several oxyhalides of calcium, strontium, and barium. A. Gautier has investigated the occurrence of fluorine in the animal body, and finds it to be present in all animal organs and tissues. The amount present was in general found to vary with the percentage of phosphorus, in the ratio of about 1:450. F. Fichter and M. Schmidt have prepared a basic tellurium perchlorate, with the formula $TeO_2.HClO_4$. A. A. Noyes and K. Toabe have determined the relative electrode potentials of tin and lead by equilibrium measurements with their perchlorates.

Miscellaneous.—G. A. Burrell and I. W. Robertson have determined the vapor pressure of ethylene, propylene, isobutylene, ethane, propane, iso-butane, sulphur dioxide, nitrous oxide, ammonia, and acetylene at temperatures below the normal boiling point, and at pressures from 760 mm. to one mm. W. D. Harkins and H. M. Paine have determined the effect of numerous other salts upon the solubility of strontium chloride. Harkins and Pearce have advanced the theory that "all salts, acids, and bases, which dissociate electrolytically into more than two ions, dissociate in steps, and thus form in solution intermediate ions." These intermediate ions are present in dilute as well as in concentrated solutions, but the percentage of the salt present as intermediate ion decreases as the solution becomes more dilute". P. A. Kober has noted that collodion and parchment membrane containers permit water to evaporate through the walls as though no membrane were present. This phenomenon is called "pervaporation". Distillation by this means is "perstillation", and the formation of crystals on the outside of the membrane under suitable conditions is "percrystallization". T. Grossmann has described a method for the detection of selenium. He finds that this element appears to be a constant constituent of teeth and bones.

ORGANIC CHEMISTRY

J. Bishop Tingle

Coal and Coal Tar.—Numerous investigations have been made recently on the thermal decomposition of coal under varied conditions of temperature and pressure. The objects of such work are, in general, to gain an insight into the nature of coals, to obtain clear ideas regarding the reactions which result in the formation of the distillation products, and to determine the conditions under which the yield of the more valuable constituents of coal tar may be increased. Similar experiments are gradually being made with petroleum and with the cheaper, less usable portions of petroleum and of coal tar. To produce large quantities of gasoline or of toluene (for explosives) from comparatively waste oils, would obviously be of great advantage. G. Egloff and R. J. Moore (*Jour. Ind. and Eng. Chem.*, ix, 40) have obtained large yields of benzene and toluene by heating (cracking) an aromatic base oil at 500-800°, under 11 atmospheres pressure. J. E. Zanetti and G. Egloff (*ibid.*, ix, 350) find that the thermal decomposition of benzene gives carbon, hydrogen and condensation compounds with the C_6 ring intact, such as diphenyl, $C_6H_5.C_6H_5$; no acetylene or ethylene is formed. D. G. Jones (*Jour. Soc. Chem. Ind.*, xxxvi, 3) has studied the thermal decomposition of low-temperature coal tar.

Acetic Acid and Acetic Anhydride.—H. Dreyfus manufactures acetic anhydride (British Patents 17920, 100450, 100452) from sulphuric oxide, anhydrous sodium sulphate and sodium acetate, in presence of acetic anhydride. He also produces (French Patent 479656) acetic acid and acetaldehyde from acetylene. The preparation of acetaldehyde from acetylene is the subject of patents by the Union Carbide Co. (U. S. Patents 1213486, 1213487). The importance of such work consists largely in the fact that acetic acid is employed in making acetone, which itself is practically indispensable in the manufacture of cordite and similar smokeless powders.

Glucose.—J. A. Wesener and G. L. Teller find that commercial glucose or starch syrup, although in part, not readily, fermented by yeast, is easily digested (*Jour. Ind. and Eng. Chem.*, viii, 1009).

Miscellaneous.—*p*-N bromide is a convenient reagent for the identification of acids (J. Emmet Reid, *Jour. Am. Chem. Soc.*, xxxix, 124). G. Grüttner and E. Krause (*Ber. Deutsch. Chem. Gesell.*, l, 202) describe the preparation of lead alkyls, PbR_4 containing four different radicals. Each of these compounds can be prepared in different ways, but they never exhibit *cis-trans*-isomerism; consequently the valencies of the lead atom are equivalent and are probably arranged like those of the carbon atom. Ammonium compounds of a new type, such as $(CH_3)_4N.N(C_7H_7)_2$, are described by W. Schlenk and J. Holtz (*ibid.*, 276); they are salts. Cyanamide has the formula N:CNH$_2$ and not HN:C:NH, according to determinations of its refractive power made by E. Colson (*Jour. Chem. Soc.*, cxi, 554). An interesting method of preparing ketones consists in heating monocarboxylic acids (boiling about 300°C.) a little above their boiling point, either in an iron vessel, or with a catalyst such as finely divided metals, oxides, etc.; the yield is quantitative. (G. Schicht and A. Grün, German Patents 295657, 296677). The Société de Chimie Industrielle of Basle describes a method for the electrolytic reduction of aromatic nitro compounds (British Patent 18081). The formation of aminohydroxy compounds is favored, and that of amines reduced, by the use of a cathode consisting of two or more metals. The cathode may be an alloy, the surface of which remains constant, or it may consist of one metal, the second being present as a salt in the electrolyte. The results obtained are illustrated by the following example: Nitrobenzene when reduced with a plain lead cathode gives *p*-aminophenol and aniline in the ratio 2:3, but with a copper cathode and a lead salt in solution the ratio is 5 or 6:1.

BIOLOGICAL AND FOOD CHEMISTRY

CARL L. ALSBERG

Nutrition.—The war is furnishing on a vast scale experiments upon nutrition minima. Apparently a far lower intake of food energy will for a considerable period of time maintain a whole nation, though with a tendency of the individual to lose from 10 to 12 per cent. of the body weight. At the lower body weight equilibrium is reached on the lesser food intake, perhaps because there has been a relatively greater decrease of the active cell substance (Loewy and Zuntz). However, the individual at the lower level is not a more efficient machine for the performance of mechanical work. He requires exactly as much energy, making due allowance for the lesser labor of moving his lighter body, to perform a given task as before. Protein in abundance is not necessary for the economical performance of work (Anderson and Lusk), and an entire nation may get along on less nitrogenous food than hitherto assumed. Apparently, however, a nation is not content without some fair ration of fat, quite an astonishing phenomenon since it had been supposed that fats merely furnish energy and are in that respect quite interchangeable with sugars and starches. Apparently hunger for fats is a very real phenomenon, the cause of which it is impossible at present to determine. Since starches yield, weight for weight, less than half as much energy as fats, it may be that the human digestive organs find difficulty in mastering the large bulk of such food that is needed if the body's energy requirements are to be met. It may be that fat hunger is a psychological rather than a physiological phenomenon. Without fat cooking becomes difficult and the diet becomes monotonous and tasteless. It is possible also that fats perform an unknown function necessary to wellbeing, though what this function may be is not known. Perhaps the experience of those who have found that infants cannot be fed successfully upon a diet poor in fat may furnish a clue. Moreover, Robertson recently has fed animals upon a diet nearly free from fat and found that animals may grow upon it but cannot permanently maintain themselves, observations which are not entirely in accord with earlier observations upon other species. The important dietary *rôle* of fat being unknown, German agricultural policy, which aimed to make Germany self-sufficient as to its food supply, was inadequate in that it failed to provide for a sufficient fat and oil production.

The necessities of war have led scientists and economists to think of agriculture and of nutrition not in terms of the individual but in terms of a whole nation or, indeed, of groups of nations. The Central Powers have had to pool their food supply and the Allies have had both to pool their own supplies and to reckon upon all the available surplus of neutrals. There have sprung up, therefore, new conceptions of the agriculture and of the nutrition of nations, world-wide in their scope, similar to the financier's conception of the world's supply of gold. The Germans, the first to feel the pinch, began by having their food supply and agriculture examined from this point of view by a commission, known as the Eltzbacher Commission. England followed with a report by a committee of the Royal Society. In these reports an attempt was made, first, to determine the food requirements of the average individual and hence of the nation, next, to determine the available food supply and thus the deficit, and finally, to recommend how this deficit might be wiped out by conservation and by changing and improving production. Both reports show that a surprisingly great amount of the necessary statistical data was lacking and serious errors were made both in overestimating requirements and in overestimating the composition and the quantity of the available food stuffs.

Some matters of special interest were emphasized in these reports. It was pointed out that by prohibiting distilling and brewing less food is conserved than one would suppose. It was shown that the production of meat when grain or other material suitable for human food is fed is very wasteful. If, however, meat must be produced from such food, then the hog is more efficient than other animals, and young animals are produced more economically than older ones. While the hog produces in the main fat, the dairy cow is about as efficient and produces protein of the highest nutritive value (Armsby). All are agreed, therefore, that dairying must be kept at the highest pitch possible, both because the cow is such an efficient producer and because milk is absolutely essential, especially for infants. Indeed, it would seem that, if there be an adequate supply of milk and bread, there will be no food riots. Consequently, efforts have been made to stretch the wheat supply, either by milling the wheat so that more flour is extracted or by mixing wheat flour with other food materials. Changing the milling of wheat has reopened the whole question of the value of whole-wheat flour, with a corresponding flood of publications. In England and France it has not proved satisfactory to extract more than 81-82 per cent. of flour from wheat. In this connection it must be remembered that milling in such a manner reduces the amount of mill by-product feeds which are so valuable in dairying. This portion of the wheat is very much better digested by cattle than by man. The value of the various war breads has been reported upon by Taylor. (See also XXVI, *Medicine.*)

Plant Chemistry; Fermentation.—The great demand for cattle foods in Europe has led to the chemical examination of many plants, especially the kelps, not hitherto studied with a view to their possible utilization as feed. It has been determined that urea occurs in many plants (Fosse, Underhill). It is also claimed that some higher plants and many micro-organism-like animals react to growth-promoting substances (Bottomley). A new sugar with seven carbon atoms in the chain has been discovered in *Sedum spectabile* (La Forge). Important theoretical studies have been made upon the optical properties of the sugars (Hudson) and upon the amino sugars (Levene and Northrop). To supply the demands for explosives a process of fermenting sugar with yeast to produce glycerine and of fermenting starch with bacteria to produce acetone is reported; the exact procedures have not been published. Falk has brought forward evidence to show that the active group of enzymes is an enol grouping and that the inactivation of enzymes is due to the conversion of an enol (active) into a keto (inactive) group.

Pharmacology; Chemotherapy.—Vocational diseases observed in munition plants have led to much pharmacological research upon organic compounds, especially trinitrotoluol, which apparently produces a condition resembling acute yellow atrophy of the liver (see also XXVI, *Medicine*). The demands of gas warfare have also stimulated pharmacological research, especially upon such gases as bromine, chlorine, phosgene, carbon monoxide and hydrocyanic acid. Aviation has made necessary new studies upon the chemistry of the respiratory gas exchange at high altitudes, and this in turn has led to new points of view upon acid intoxication (acidosis). Van Slyke and Cullen have devised new methods for studying the composition of the blood in acidosis, the application of which has led to some new views (Henderson). Acidosis has also been brought into relation with surgical shock. The failure of the supply of German synthetic drugs has stimulated research in chemotherapy, especially upon the organic compounds of arsenic, mercury, copper and vanadium. Robertson has found that "tethelin" (*A. Y. B.*, 1916, p. 621) is of value in stimulating the healing of wounds. (See also XXVI, *Physiology and Pharmacology.*)

Foods; Food and Drug Control.—The scarcity or high price of foods and feeds has stimulated the introduction of a host of substitutes and surrogates, especially in Europe, the value of which it will be possible to determine only after the war. The high price of milk has led to much agitation, with the prospect that in some cities efforts are likely to be made to municipalize or at least to exercise economic as well as sanitary control over the milk supply (see also XVI, *Dairying*). Important studies upon the bacterial flora of milk have lead Rogers, Clark and Evans to the conclusion that the presence of fecal bacteria may be determined with great certainty by their new methods, but the usual tests do not necessarily prove the contamination to be due to fecal matter. Bacteria that closely resemble *B. coli* are to be found regularly upon grain. In response to the strong export demand there has been a great increase in the production of condensed and evaporated milk and of dried skim-milk powder. Dried buttermilk for calf and poultry feed is also being produced in increasing quantities. In order to make it possible to produce Swiss-type cheeses more closely resembling the imported article, Wisconsin has changed the legal fat minimum for this type of cheese from 50 to 47 per cent. Perhaps this will be followed in the future by the removal of some of the restrictions upon the manufacture of skim-milk cheeses. New York State has abrogated the old law prohibiting the introduction into New York City of skim milk. Langworthy and Holmes have shown that the common opinion that young veal is the cause of digestive disturbances or fails to be digested as thoroughly as other food is not justified. The high price of eggs has very largely forced the egg-freezing and the egg-drying industry out of the United States into China. Large quantities of these products have been imported. There was during the year an unprecedented increase in the drying of fruits and vegetables (see also *Sanitary Chemistry, infra*). The armies of the Allies are using large quantities of such material. The French Army is also using soy-bean products, and there is hope that this cheap and valuable food may become permanently established in the European and American dietary. Osborne and Mendel have found that cottonseed meal or flour produced as a by-product in the hot pressing of oil is non-toxic and entirely adequate for growth, whereas meal or flour prepared without heating is toxic, while the oil produced by cold pressing is harmless (*cf.*, however, *A. Y. B.*, 1916, p. 620). Dickinson reports that the food poisoning known as botulism because it is due to the growth of *B. botulinus* is more common than generally supposed, and may be produced by vegetable foods such as beans or corn as well as by animal foods (*cf.* also Shippen, Buckley). The United States Department of Agriculture issued the following food decisions: No. 168, amending the regulations for marking the quantity of the contents of food in package form; No. 169, suggesting definitions and standards for edible vegetable fats and oils; and No. 170, suggesting standards and definitions for sweetened condensed milk, condensed skimmed milk, sweetened condensed skimmed milk, dried milk, dried skimmed milk and malted milk. In Henningsen Produce Co. *vs.* Whaley, Internal Revenue Collector (238 Fed. Rep. 650) the court held that the 16 per cent. limit of moisture in butter established for administrative purposes had no sound legal basis. On Dec. 4, 1916, the U. S. Supreme Court upheld the twelve per cent. fat standard of Iowa and the eight per cent. fat standard of Pennsylvania. In Simpson *vs.* United States, the Circuit Court of Appeals held in effect that the term "remedy" used in connection with drugs claimed to have been misbranded by reason of false statements concerning their curative effects implied a curative tendency though not guaranteeing a cure.

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SANITARY CHEMISTRY

E. M. CHAMOT

Foods.—In America the great work of the year in sanitary chemistry has been in the successful development of food conservation and in the elimination of waste. The shortage of metallic tin and the consequent curtailment of the supply of "tin cans" led to the increased preservation of food by drying, and through the efforts of Federal and state food conservation bureaus, there was a great increase in the canning and drying of fruits and vegetables in the household (see also XVI, *Agriculture*). In the preparation of directions for home canning a vast amount of experimental work has been done, especially upon the methods of pre-sterilization treatments such as "blanching" and upon the time required for complete sterilization. Although in the early part of the season a single long sterilization was generally advocated, it is gratifying to note that later there has been an increased tendency to suggest shorter intermittent sterilization, whereby less change in the chemical composition is effected and there is less danger of spoilage through the development of bacterial spores which may have escaped destruction in a single prolonged heating. In but very few instances have directions been published suggesting the employment of food preservatives. Although this is a matter for congratulation, their abandonment is probably due to their high cost rather than to an appreciation of their objectionable character.

In the industrial preservation of foods the developments have been in improved methods of handling products and in the elimination of waste. The use of moist or so-called "conditioned" air in the drying of vegetables and other food products is coming to the fore and may in time displace our older unsatisfactory vacuum driers.

In Europe the work of the food chemist has been directed mainly to the discovery of methods for rendering nutritious and palatable products never regarded as worthy of attention as sources of food for man. These include various grasses and forage plants, weeds, the inner bark and buds of trees, wastes of various sorts, animal and vegetable, sawdust, etc. All these materials have been converted into products more or less nutritious.

Of the many food products which have received special attention in the United States (see also XXV, *Medicine*), chocolate, especially sweet and milk chocolate, and nuts should be mentioned. Nuts of all varieties received more than usual attention, with the result that a large number of patents were issued covering all sorts of nut products, "breads", butters and "spreads," beverages, etc. Some of the patent processes aim to produce substitutes for cow's milk which are claimed to be palatable and nutritious; their compositions, as shown by the usual methods of chemical analysis, compare very closely with animal milk in fats, solids and carbohydrates, total nitrogenous matter, ash and phosphates.

A beginning has been made in a wholly neglected field which bids fair to furnish us with information of great interest and greater value. This is the investigation of the function of the mineral and allied compounds in our foods and their *rôle* in animal physiology. Not only must we know whence the inorganic constituents of the body are derived and how they are utilized, but we must learn how to select our foods and potable waters so as to avoid consuming excessive quantities of objectionable components and yet so select our dietary as to insure the certainty of a sufficient amount of other essential ingredients. It may safely be conjectured that some of these compounds, though present in only infinitesimal quantities, may nevertheless be as important to growth and health as enzymes and vitamines and the "growth material" in proteids.

The repeal of laws in Europe forbidding the use of saccharin has followed a serious sugar shortage and an increased use of this compound has resulted. It has been pointed out that a better substitute for sugar may be found in dulcin (paraphenetol carbamide), for this organic compound is even sweeter, is free from a bitter after-taste, and is tolerated better than saccharin.

Water Purification.—In water purification the developments have been almost wholly in engineering lines, either in the construction or in the operating of purification plants. In the latter case the efforts have been directed toward reducing cost of operation, which has risen rapidly in the last two years.

A number of American municipalities have installed in connection with their filters small plants for the manufacture of aluminium sulphate, thereby not being subject to long-term contracts or to market fluctuations. Although only operated a short time, the information available points toward a reduced cost of coagulant and therefore a lower cost of filtration. (See also XX, *Civil Engineering.*)

Further studies of the combined use of ammonia and hypochlorite appear to confirm the first reports, namely, that the bactericidal effect is greatly increased, the amount of hypochlorite necessary to disinfect a given water is decreased, and the cost of operation is proportionately reduced to a figure comparing favorably with that of liquid chlorine.

The demand for chlorine and hypochlorite by the armies for the field disinfection of drinking water has resulted in the production of higher-grade materials. A better chlorine has been put out, and a stable form of calcium hypochlorite has been produced which has about three times the amount of available chlorine found in ordinary "35 per cent. bleach". The stability of this compound is such that from it compressed tablets may be prepared for use in purifying individual supplies of drinking water, one being sufficient for the disinfection of a canteen; a second tablet of a carbamide compound corrects any excess of chlorine. The new stable hypochlorite bids fair to displace liquid chlorine for army use in the fields. (See also XXV, *Medicine.*)

A new reagent, a hydrochloric-acid solution of hexamethyltriparaamino triphenylmethane, has been found for the detection of free chlorine in water. Since this reagent gives a violet color with free chlorine, it may possibly displace orthotolidin, which produces a yellow color, not so readily observed; provided it proves successful in the hands of analysts.

Sewage Purification.—In spite of a large amount of experimentation on the activated-sludge process of sewage purification, this process has not yet reached a sufficiently practical and economic stage to warrant its adoption on a large scale by American municipalities. Nor have the efforts made to obtain a satisfactory separation and drying of the sludge met with complete success although a combination of fine screens and centrifugal separation has given results seeming to indicate that such a system may be developed so as to become commercially possible and even profitable. There is no longer any doubt that activated sludge conserves a large part of the nitrogen contained in sewage and can be made to yield a fertilizer of high economic value, if only a drying method can be developed.

A satisfactory method for the treatment of tannery and similar wastes has been found in the application of copperas (commercial ferrous sulphate) to the waste liquor either alone or in combination with lime. After a short subsidence in a suitable tank or basin the clarified liquid may be discharged into streams.

Air Pollution.—The reports of the British commission charged with the investigation of the pollution of the air have been made public (*Lancet*, Supl. 1916). These reports detail their findings and suggest methods for the detection and determination of impurities. The character of the gross pollution of London air may be gathered from the following analysis, given as the composition of material removed by a ventilator filter in London:

	Per cent.
Carbon (from soot, etc.)	35.48
Sand (earthy dust)	37.99
Oxide aluminum (Al_2O_3)	8.34
Oxide iron (Fe_2O_3)	2.44
Calcium sulphate ($CaSO_4$)	5.09
Calcium carbonate ($CaCO_3$)	2.17
Magnesium carbonate ($MgCO_3$)	0.33
Ammonium sulphate ($(NH_4)_2SO_4$)	5.77
Tarry matter	1.49
Fibrous matter	0.95
Sodium chloride	trace

AGRICULTURAL CHEMISTRY

William H. Ross

Soils.—The predominance of work in agricultural chemistry during the year has related principally to questions of soil fertility and to increasing the fertilizer supply. In continuing the soil-fertility investigations of the Bureau of Plant Industry on the organic constituents of the soil, Wise and Walters (*Jour. Agri. Research*, x, 85; *Jour. Am. Chem. Soc.*, xxxix, 1778) have isolated from different soils two organic compounds which have been identified as cyanuric acid and *p*-hydroxybenzoic acid. The quantity of each acid that was prepared in pure condition corresponds, respectively, to about 26 and 87 lb. per acre-foot. The total number of organic compounds isolated from the soil and identified has now reached 42.

In field tests with vanillin and salicylic acid, Skinner and Noll (*Jour. Am. Soc. Agronomy*, viii, 273) have found that the harmful effects of the former could be lessened by sodium-nitrate fertilizer, and of the latter, by acid phosphate. The effects of both were overcome by liming the soil. It was also observed that organic substances such as aldehydes may exist in one soil and influence growth, while in another soil they are destroyed by the life processes of the soil and so do not remain to affect soil productivity (*cf. A. Y. B.*, 1915, p. 624). A similar result was observed by Truog and Sykora (*Soil Science*, iii, 333) in a study of the soil constituents which inhibit the action of plant toxins. They concluded from their results that chemical reactions probably play a more important *rôle* in the amelioration of toxicity in soils than do physical phenomena such as adsorption, and that in soils having an adequate supply of the fertilizing elements the injurious action of toxins which may be present or arise in any way may be entirely or largely prevented by proper tillage and the use of lime.

The power of soils to bring about the oxidation of applied sulphur and the resulting injurious effect in normal soils of the sulphuric acid formed was referred to in the YEAR BOOK for 1916 (p. 626). It has recently been suggested, however, that for "black alkali" soils limited applications of sulphur should have an entirely different effect. In this case any formation of acid through the action of soil organisms would simply change the harmful "black alkali" into the less injurious "white alkali". The use of sulphur in the reclamation of certain alkali soils has accordingly been recommended, but its use in this direction has apparently not yet met with any extensive application.

The sulphur occurring normally in soils is partly combined as sulphate but occurs principally in the form of unassimilable organic and inorganic compounds. As the sulphates in the soil become exhausted, the sulphur-feeding of crops will then depend largely on the ability of the soil to produce sulphates from these unavailable substances. In the course of a study of the sulphate-producing power of soils, Brown and Johnson (*Iowa Agri., Exp. Sta. Research Bull.* No. 34) found that applications of various phosphates all had a marked effect in increasing sulphate production. The suggestion was accordingly made that the beneficial effects resulting from the application of phosphates may be partly due to an increased production of sulphates and not entirely to the phosphorus applied. Swanson and Miller (*Soil Science*, iii, 139) found, on the other hand, that for the cultivated soils they examined, sulphate formation has been in excess of the needs of the crop, and that loss of sulphur due to the amount taken up by the crop is insignificant compared with the loss through leaching of sulphates from the soil. The opinion is expressed that loss of sulphur may be an important factor in the loss of crop-producing power, and that these losses can not go on indefinitely without affecting crop yields unless the losses are made good in some way. It may be pointed out, however, that the results obtained in field tests with sulphates have often been disappointing in view of what was to be expected from theoretical considerations, and that notwithstanding the many investigations made on this subject the *rôle* that sulphur plays in relation to soil fertility seems still to be little understood.

The procedure usually followed in representing the composition of a soil is to give the total quantity of each of the elements present. The desirability of knowing also the manner in which the elements are combined is emphasized by the results obtained by Shorey, Fry and Hazen (*Jour. Agri. Research*, viii, 57) in an extended study of the calcium compounds occurring in a number of different soils. By application of chemical and petrographic analyses the quantities of calcium occurring as carbonate, sulphate, combined with humus and with easily and difficultly decomposable silicates were calculated. The results show that it is possible to have two soils with the same calcium content but having the compounds of calcium present in quite different proportions, or a soil may be characterized by a high calcium content and yet be low in calcium carbonate.

The conflicting ideas and theories so characteristic in the past of the subject of soil acidity now seem to be uniting in the view that the acidity of ordinary soils is due mainly to the insoluble acids of the soils, as silicic acid, acid alumino-silicates and perhaps to insoluble organic matter. In mineral soils soluble acids or acid salts are thought to be only temporarily, if ever, present and never permanently so. In peats and mucks, on the other hand, where the formation of organic acids is quite rapid, the active acidity may be permanent. According to this view, soil acidity is due not so much to the physical property of selective absorption, as some have supposed, but to a chemical condition such as described, which may largely be brought about by the removal of the basic constituents of the soil. Ames and Schollenberger, *Ohio Agri. Exp. Sta. Bull.* No. 306.)

The views advanced by Stewart and Peterson regarding the origin of "nitre spots" in certain parts of Colorado and Utah have already been referred to in a previous issue of the YEAR BOOK (1914, p. 624). As a result of further work along this line the conclusion is reached that the alkali salts occurring so widespread in the arid and semi-arid portions of the West have a common origin with the nitrates of the "nitre spots", and are the direct result of the leaching action of water upon the salts preexisting in the country rock of the observed area. The original source of the salts in the rock is assumed to be the shallow seas which according to geological evidence covered portions of many of the western states during the Cretaceous and Tertiary periods.

Fertilizers.—The abnormal demand for use in munitions of many of the raw materials normally required in the fertilizer industry has led to a still further scarcity and increase in the cost of almost all kinds of manufactured fertilizers (see also XVI, *Agriculture*), and investigations of fertilizer resources were continued throughout the year with renewed interest and activity. These were directed principally along the lines of finding domestic sources of potash, of developing new and improved methods of fixing atmospheric nitrogen, and of devising methods for making available the phosphoric acid of phosphate rock independent of sulphuric acid. The results secured have attracted a great deal of interest and give promise of the widest commercial application.

The work that has been done on the synthetic or Haber process of fixing atmospheric nitrogen is particularly noteworthy. This process has recently been developed to a point which makes its adaptability to American conditions more promising than that of any other nitrogen-fixation process now in commercial operation. A second process that has attracted a great deal of interest, known as the Bucher process, consists in passing nitrogen over a mixture of powdered coke, iron and sodium carbonate heated to about 900 ° C. In this way, the nitrogen is fixed as sodium cyanide which may be subsequently treated to yield compounds suitable for use in fertilizers (Bucher, *Jour. Ind. Eng. Chem.*, ix, 233). A committee appointed by the President to investigate the best, cheapest and most available means for the production of nitrogenous materials for the manufacture of munitions of war and fertilizers, for which purpose Congress appropriated $20,000,000 in 1916 (*A. Y. B.*, 1916, p. 627) recommended that there be set aside such sum, estimated at $3,000,000, as should be necessary to build a plant for the production of ammonia by the synthetic process as developed by the General Chemical Co., and further that a sum not to exceed $200,000 be assigned for experimenting with the Bucher process with a view to developing it for the commercial production of ammonia through cyanide. The report of the committee has been approved, and the commercial manufacture of atmospheric nitrogen products in this country in the near future is accordingly to be expected.

The production of potash in the United States in 1916 amounted to 9,720 tons, or almost exactly ten times the production in 1915. During the first half of 1917 the production was almost 50 per cent. greater than the total for 1916, and it will likely exceed 25,000 tons for the entire year. This, however, is only about 10 per cent. of the annual importation from Germany before the war.

The principal source of American potash at present is the salt lakes of Nebraska, but one of the most promising sources for future development is the cement industry. In an investigation recently completed in the Bureau of Soils it was shown (Ross, Merz and Wagner, *U. S. Dept. of Agr. Bull.* No. 572) that the potash that escapes from the different cement plants of the country varies from 0.35 to 5.34 lb. per bbl. of cement with a weighted average of 1.94 lb. Taking 90,000,000 barrels as the average annual production of cement in this country, it may be estimated that the total potash escaping from all the cement plants of the country as at present operated amounts to about 86,000 tons annually. Of this amount about 80 per cent. or 70,000 tons, is thought to be recoverable.

In addition to that which was recovered in the cement industry, small amounts of potash have also been recovered during the year from potash silicates by a number of other processes, but all more or less in an experimental way. One of the most promising of these processes consists in digesting the potash mineral with lime and water under pressure. The potash goes into solution in the caustic form and may be recovered by simply evaporating the solution. The residue is suitable for making cement, or when pressed with sand makes a good quality of brick and other building material. This process is now being developed on a commercial scale by the Kaolin Products Co. (Ross, *Jour. Ind. Eng. Chem.*, ix, 467).

The increasing cost of acid phosphate on account of the high price of sulphuric acid has led to renewed inquiry into the possibility of substituting finely ground untreated phosphate rock for that which has been treated with sulphuric acid. As a result of experiments made at the Ohio Agricultural Experiment Station, Thorne (*Bull. 305*) concludes that raw phosphate rock may be used with profit on land that is materially deficient in available phosphorus, but as a rule acid phosphate has proved to be not only a more effective but also a more economical carrier of phosphorus to crops under conditions which render the freight charges a relatively large part of the cost of the fertilizer. (See also *Industrial Chemistry, infra.*)

During the year a great deal of attention has been given to the composition of city garbage with a view to determining the practicability of its more general use in the manufacture of garbage tankage (*cf.* O'Brien and Lindemuth, *Jour. Ind. Eng. Chem.*, ix, 49). According to Schroeder the availability of the nitrogen in garbage tankage compares very favorably with that in cotton-seed meal, and the conclusion is reached that the proper use of garbage tankage should give the usual results obtainable from medium or low-grade fertilizers.

In a comparative study of the nitrifiability and ammonifiability of nitrogenous material by different soil types, Lipman and Burgess (*Soil Science*, iii, 63; *Jour. Ind. Eng. Chem.*, ix, 189) have observed that there is no correlation between ammonifying and nitrifying efficiency of soils for a given kind of fertilizer, and that with the arid soils used the ammonifiability data gave the fertilizers tested the reverse position with respect to availability to that given by the nitrifiability data. Since nitrate is the form of nitrogen which plants absorb from soils in preference to any other, and as a fairly accurate relation has been found between a soil's nitrifying power and its crop-producing power, it is suggested, for arid soil conditions at least, that nitrifiability rather than ammonifiability be adopted as the criterion of availability of nitrogen fertilizers.

Plant Chemistry.—In an investigation on the effect of fertilizers on the composition and quality of oranges, Young has found (*Jour. Agri. Research*, viii, 127) that under the conditions of the experiment neither potash nor phosphates exercised any specific effect on the composition of the oranges. Applications of nitrogenous fertilizers alone or in combination with potash and phosphate resulted in a slightly lower content of sugar, a somewhat coarser fruit and a little less juice in the orange. The fruit in this case also showed a higher percentage of nitrogen than when no nitrogen was applied, but no corresponding increase was obtained with either phosphates or potash. The popular view that by a proper combination of the various fertilizing elements one can in a large measure govern the quality and flavor of fruits is thus not supported by the experiments.

Experiments made by Gile and Carrero (*ibid.*, ix, 73), show that a plant does not absorb a maximum amount of one mineral which is applied to only some of the roots even although all other essential elements are applied to all the roots. The fewer the roots supplied with the element the smaller the total amount absorbed. This applies when the total amount of the element supplied is equal to or in excess of the needs of the plant. Increasing the concentration of the element in question in the complete nutrient solution did not appreciably alter the result. It follows, therefore, that a plant is not able to attain a maximum absorption by means of only a portion of the roots. (See also *Biological Chemistry, supra.*)

Dairying.—Considerable attention has been given of late to methods for the identification of water added to milk. According to Keister (*Jour. Ind. and Eng. Chem.*, ix, 862) the freezing-point figure of milk is the most constant one yet obtained and the safest basis upon which to draw conclusions as to the presence or absence of added water. The freezing point of milk is independent of breed, age of cow, period of lactation or quantity of milk, and it is shown that the presence of water added in excess of five per cent. can be detected with certainty. It is essential, however, that the tests be made on reasonably fresh milk, as the presence of acid lowers the freezing point.

In experiments made at the South Dakota Agricultural Experiment Station, Larsen *et al.* (*Bull.* No. 171) found that pasteurization of cream at 160° F. for 10 minutes was more effective in destroying total microörganisms than pasteurizing at 140° for 25 minutes or at 180° followed by immediate cooling. The only noticeable change in the composition of the cream due to pasteurization was a slight decrease in percentage of water and a consequent increase in percentage of total solids. In no instance was it noticed that the high pasteurization temperatures unfavorably affected the body of the butter or altered appreciably its chemical composition. (See also *Biological and Food Chemistry, supra*; and XVI, *Dairying.*)

ELECTROCHEMISTRY

G. A. Roush

Power Resources.—One of the most important features of the year 1917 in the field of electrochemistry has been the power problem. The great center of electrochemical development is Niagara Falls. While there have been developments of other power sources, such as at Massena, N. Y., Kanawha Falls, W. Va., Whitney, N. C., Marysville, Tenn., and others, still the total of all of these is small in comparison with Niagara. There have been only small developments in power supply during 1917 (see also XX, *Electrical Engineering*), and these have not been able by any means to meet the demands of the general expansion of business. Besides, there has been a shortage of power at Niagara Falls, due to a greater demand for power on the Canadian side and decreased imports. The result has been that most of the large Niagara Falls plants have been able to run only at considerably less than full capacity. A number of attempts have been made to improve conditions and to secure action on the part of the Federal authorities which would permit the extension of the present power supply, but as yet nothing definite has been accomplished.

The Electric Furnace.—The usual large amount of literature has appeared concerning the electric furnace and its use in the steel industry. John A. Mathews (*Trans. Am. Electrochem. Soc.*, xxxi) reviews the inception of the electric steel industry, its early development and its present achievements. By using molten charges from an open-hearth furnace, electric steel can be made of as good quality as from a cold charge. This process also saves oxidizable ingredients, such as chromium, which are lost in remelting in open-hearth furnaces. J. L. Dixon (*ibid.*) describes the details of construction of furnaces and discusses the electrical factors which must be considered, the thermal considerations which affect the efficiency and the deterioration of the furnace, and the chemical reactions which eliminate sulphur from the steel and deoxidize the bath. R. F. Flinterman (*ibid.*) discusses the manufacture of steel castings by the crucible process, the side-blown Tropenas converter and the electric furnace. Adaptation of the electric furnace to shop conditions has been entirely satisfactory, and the furnaces have come up to all expectations. The quality of the steel, both basic and acid, has proved superior to that of converted metal. A. A. Meyer (*ibid.*) investigated the electrical characteristics of electric furnaces, studying a Heroult and a Grönwall furnace. He describes their construction, operation, load fluctuations, power factors, unbalancing effects on the three-phase system, and wave distortion as determined by the oscillograph. The oscillograph data are studied closely, to draw from them deductions as to the self-induction of the furnace and connections. The effect on the accuracy of the customers' watt-hour meters is also considered. C. H. vom Baur (*ibid.*) describes improvements and changes in the Rennerfelt furnace intended better to adapt the Swedish design to American practice. The furnace is now made circular with one set of electrodes, or oval with two sets. The side electrodes are adjustable in a vertical plane allowing them to dip toward the bath. The power for a furnace of a given size has been largely increased. These changes have resulted in longer life of refractories, reduction in power per ton of metal melted and treated, and greater tonnage per day. (See also XVII, *Iron and Steel.*)

Electrolytic Zinc.—E. E. Watts (*Met. and Chem. Eng.*, xvi, 645) discusses the hydrometallurgical and electrolytic treatment of zinc ore. Experiments showed that successful electrolysis is impossible in the presence of H_2SO_3 or $ZnSO_3$. Depending on the current density, the voltage varied from 5 to 6 volts. The extraction of Zn from ZnO varied from 95 to 100 per cent. While producing zinc at the rate of 8,000 lb. per month, the cost was as high as 18 cents per pound plus the cost of the ore. One weakness in the process lay in the diaphragm material. On a basis of a steady production of 60,000 lb. per month, it is estimated that zinc could be produced for four cents per pound with power at $14 per horsepower year. T. A. Rickard (*Min. and Sci. Press*, cxiii, 903) has described electrolytic refining by the Consolidated Mining and Smelting Co. of Canada at Trail, B. C. The electrolytic zinc plant is now producing 70 tons of spelter per day, 99.801 per cent. fine. As the process is developed, the impurities will be further decreased. The cost of power is 0.33 cent per kilowatt-hour. At a consumption of 2.2 kw.-hr. per pound of spelter, the power consumed in the process of electrolytic extraction represents a cost of 0.73 cents per pound of metal. C. A. Hansen (*Eng. and Min. Jour.* ciii, 832) describes the Judge zinc plant at Park City, Utah. Zinc concentrates, after passing through a standard Wedge furnace, are leached in an eight per cent. sulphuric-acid solution in Deveraux tanks. The product from the leaches is passed through classifiers to a Dorr thickener and an Oliver filter. The slimes from the filter are stored with the discharge material from the classifiers and contain the lead and silver. Cadmium, copper and other impurities are removed by zinc shot. The cell room now contains 120 cells, arranged in two groups of 60, each receiving power from its own 5,000-amp., 250-volt generator. For cathodes there are 12 aluminium disks per cell, each five feet in diameter, which rotate slowly. These 12 cathodes collect about 5,000 lb. of zinc in the course of about three weeks. (See also XVII, *Zinc.*)

Electrolytic Refining.—L. Addicks (*Met. and Chem. Eng.*, xvi, 23) analyzes the sources of loss of efficiency in copper refining. They may be classified as follows: (1) current leakage, (*a*) to ground, (*b*) through electrolyte, (*c*) between electrodes; (2) reaction, (*a*) deposition of impurities, (*b*) gassing, (*c*) valence; (3) cathode shrinkage, (*a*) sulphatizing, (*b*) ferric salts, (*c*) nodules, etc. Although any or all of these sources of efficiency loss can be kept down to a very small quantity, most of them may become very serious under unfavorable conditions. Entire disregard of conditions may result in a current efficiency as low as 60 per cent.; poor work, 85 per cent.; good balanced operation, 92 per cent.; and efficiency regardless of expense, 99 per cent. Addicks also discusses (*ibid.*, 311) current density in copper refining, and gives very comprehensive data regarding the distribution of resistance in the tank and the influence of temperature of the electrolyte on the tank resistance.

Electrolytic Pickling.—John Coulson (*Trans. Am. Electrochem. Soc.*, xxxii) investigated the effect of the electrolytic pickling process on the physical properties of iron and steel. To determine the embrittling effect of absorbed hydrogen upon steel pickled in different ways, samples of spring-steel wire were pickled chemically by simple dipping in acid and also by electrolytic pickling, using them as cathodes or as anodes. Oscillation tests on the original wires, the wires sand-blasted, and the three sets treated as described showed the chemically cleaned and the cathodically cleaned to be very brittle, while the anodically cleaned had the strength of the original samples. Similar tests were also made with drill-rod steel, hot-rolled Bessemer and cold-rolled steel, after which mechanical tests were made as to strength, elongation and reduction of area. The chemically and the cathodically cleaned specimen again showed greater brittleness, which was most marked with the high-carbon steels and less marked with the soft steel. M. deK. Thompson and O. L. Mahlman (*ibid.*, xxxi) investigated the relative efficiency of the electrolytic and the chemical processes of pickling steel as regards the amounts of acid, iron, and time consumed. The electrolytic method was found superior in all three respects.

J. L. Jones (*ibid.*, xxxii) discusses the recovery of copper and sulphuric acid from copper-mill pickling solutions. This can be done by cementing the copper on iron scrap, or by neutralizing the excess acid and evaporating down to bluestone, or by the electrolytic method, extracting the copper in a pure condition and regenerating the acid for re-use. Jones describes the plant for this process. The acid content is run up to 20 per cent. and the copper content reduced to about one per cent. Some of the copper is deposited directly on steel plates as copper plating, but most of it is collected as cathodes for remelting.

Electrodeposition.—Oliver P. Watts and Albert Brann (*ibid.*, xxxi) experimented with silver and copper cyanide solutions, with the addition of varying amounts of free potassium cyanide, to determine the effect of the latter in producing liberation of hydrogen at the cathode. The effect is much greater with copper solutions than with silver solutions. Test experiments show that liberation of hydrogen is direct, that is, not due to action of the free cyanide, but to raising of the single potential necessary to deposit the metal until it reaches that sufficient, electrolytically, to set free hydrogen. F. C. Mathers (*ibid.*) continues his investigations on the electrodeposition of metals, and with the assistance of various collaborators has covered the effect of addition agents in various antimony baths, the adsorption of addition agents by various metals, and the effect of addition agents in the deposition of silver. Walter E. Koerner (*ibid.*) investigated the electrolytic behavior of tungsten. He calculated the single potentials of tungsten in normal solutions of acids, alkalies, and neutral salts from e. m. f. measurements, and studied the occurrence of tungsten as cation or anion in different solutions. He also determined the electrochemical equivalent of tungsten experimentally, investigated the passivity of tungsten under different conditions, and experimented with the use of tungsten in battery and storage cells.

Electrodes.—M. deK. Thompson and T. C. Atchison (*ibid.*) studied the properties of magnetite electrodes and worked on a method for their production. They found that the toughness of the anodes is greatly increased by the addition of copper oxide and increases linearly with the amount of oxide added. The resistance to corrosion of the five per cent. copper-oxide mixture when used as anode in a 10 per cent. sulphuric-acid solution is greater than that of pure magnetite.

Storage Batteries.—W. C. Brooks (*ibid.*) discusses automobile storage batteries. He reviews the chemistry of the lead accumulator and classifies the service required in automobiles as for ignition, starting and lighting, and motive power. The construction and design of each kind of battery is discussed, also their electrical characteristics and causes of trouble and failure.

Dust and Fume Collection.—W. W. Strong (*ibid.*) treats the theoretical aspects of electrical fume precipitation. He discusses the corona discharge about a centrally-placed electrode, showing the different regions about it in which exist positive space charges, ion formation, and negative space charges. Irregularities in the corona discharge due to deposits on the central wire cause brush discharge and inner and outer corona gas eddies. The mathematical formulæ governing the operation of such a process are developed and their application explained. The time of deposition and path of the fume ions in the treater are discussed, and the precipitation constant for different size pipes and different temperatures determined. Linn Bradley (*Met. and Chem. Eng.*, xvi, 336) writes concerning the application of the Cottrell process to smelters and refineries. The factors to be considered in any installation are volume of gases, their temperature and composition, barometric pressure, origin of gases, size of stacks, nature of dust, and type of electric plant. With non-conducting gases steam is introduced and mixed with them before they are treated.

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

James R. Withrow

Industrial Conditions.—The entrance of the United States into the European War and the continuance of war conditions maintained the recent general tendencies of development in industrial chemistry and chemical engineering and tended to intensify the factors discussed in the Year Book for 1916 (p. 630). Redoubled efforts in invention and development by both industrial chemists and chemical engineers have been called forth. Expansion and rapid installation of plants continued where possible, but war conditions brought increased cost of fuel, great difficulty in transportation and increased prices of steel and also other metal products (see XVIII, *Manufactures*). These increased prices appear to be not so much a matter of shortage of supplies, for one can always get supplies "ex-warehouse" if one pays the premium, even though the factory be "sold out for three years in advance", as a result of the discovery by producers that their customers can be forced to pay high premiums for engineering supplies. Without regard to consequences to the country, themselves or anyone else, producers of chemical equipment, such, for instance, as vacuum drying machinery, demand $30,000 for machines for which they would have been glad to receive $5,000 a year or more ago, blandly telling the chemical manufacturer to pass the exorbitant increase along to the consumer. Naturally chemical manufacturers, who will be subject to a serious drop in prices immediately on the conclusion of peace, are loath to expand extensively with equipment which, normally expensive, is now exorbitantly costly. Developments in war lines, such as potash recovery, which otherwise would be eagerly taken up now, lie untouched because of these exorbitant charges combined with slow deliveries, and the country at large must suffer the consequences of the unnecessary scarcity thus artificially produced. Not only has the general raising of prices on every pretext reached a stage which seriously hampers development in the chemical industries of the country, but no greater help could be given to Germany by those who furnish supplies of many kinds than this sort of industrial brigandage.

War Materials.—The entry of the United States into the war naturally created a demand for war chemicals in enormous quantities for use in explosives, in gas warfare and as medical supplies. It is imperative that the furnishing of war supplies should curtail as little as possible the normal supplies required in the arts, the vigorous operation of which is the foundation of a successful war. This the war officials appear thoroughly to appreciate. The situation demands expansion in the chemical industry and the development of new processes in cases where raw materials are difficult or impossible to secure, and it will result in great benefit to industrial chemistry and chemical engineering provided the impediments already discussed can be speedily removed.

Many chemicals are required for

war purposes which were not in stock and have not been manufactured previously, as they are not used to any extent in peace times. The supply of these materials and the meeting of the demands of gas and submarine warfare have brought up a host of problems. Providentially we have many skilled research chemists who are competent to handle them. Chemists have volunteered so extensively as to embarrass the Government, which is, however, using the services of many of them. Happily, too, most of the war questions which arise are fundamental problems which do not necessarily require technical experience for their solution. Purely technical problems are being and will be met in excellent style. It will take time, of course, for the Government to learn that since chemistry is such a universally useful science, a chemist may be valuable for one problem and only passable or even dangerous for others. Just as in medicine we could scarcely employ a bacteriologist for an appendicitis operation, so we should not have to pay for the technical education of a good analytical chemist or a purely research chemist at the cost of blunders and lost time on manufacturing problems, especially when loss of life by delay is part of the price. The chemists themselves are to blame for some deplorable cases of misapplication, and it is because most of them have had little experience with the industrial ethic which makes a man refuse to undertake that for which his previous experience has not prepared him without making it clear that the purchaser must pay for the education involved. Men with thorough experience in chemical manufacture should be used on certain government problems more than is the case at present.

The increasing use of platinum in jewelry is becoming a menace to chemistry and increases the cost of munitions and fertilizers. Great progress is being made in improving chemicals for wound treatment, such as chlorine, hypochlorites and chloramines. The Government is starting to develop the production of ammonia from hydrogen and atmospheric nitrogen by a process claimed to be superior to that kept alive in Germany before the war by government subsidy.

Potash.—All possible sources of potash in the country are being exploited. Evaporation of certain brines continues, such as that of Searles Lake in southern California, which gives a mixture of sodium and potassium salts and in the development of which $2,500,000 has been invested. (*A. Y. B.*, 1914, p. 629; 1915, p. 458). Owens' Lake in California is being worked also. It is estimated to contain 3,000,000 tons of potash. It is worked for sodium carbonate, and potassium carbonate will be recovered from the spent waters, which contain 4.25 per cent. of potassium oxide. These projects depend commercially upon the recovery of some other product in addition to potash.

Near Antioch, in western Nebraska, Jesse Lake and a group of lakes around it are being successfully utilized, and are our most important present source of potash, furnishing about one-third of the total production in 1916 (see *Agricultural Chemistry, supra*). The output at present is from 7,000 to 8,000 tons per month, running between 23 and 28 per cent. potassium oxide. It is suggested that these lakes originated from the leaching of the ash of prairie and sagebrush fires. Drillings around the lakes and in the center of Jesse Lake reveal no salt deposits of any kind. Salt springs here and there in the lake body are possible, though there are as yet no signs of them. If the leaching theory is correct, Jesse Lake will be exhausted in less than two years. An interesting feature is that some of the lakes contain sodium sulphate and chloride, while over a rise of ground will be another lake with sulphate and carbonate and a total absence of chloride. It is probable that production will be pushed up to 10,000 to 12,000 tons per month. The product containing carbonate especially is used for fertilizer just as it leaves the driers. The water from the lakes is pumped as much as 12 to 14 miles to the four potash factories. Some of them represent an investment of as high as $400,000. The brine is evaporated in vacuum evaporators. The mush of crystalline salts and remaining water is forced into rotary driers from which it emerges as dried salt. It is very rich in sodium salts and expensive to purify for the production of pure potassium salts. This, however, is done by some of the chemical manufacturers who depend upon this product for the potassium used in the manufacture of chemicals.

Some 11,000 tons per annum of potassium sulphate is made from the Utah deposits of alunite. It is free from chloride and is largely used on tobacco and beet and cane sugar, some of it being exported to Cuba. The presence of chloride interferes with the proper recovery of sugar from sugar juice.

Kelp and ashes of various plants are being utilized, furnishing about 17 per cent. of the potash production of 1916. Plants for gathering and drying kelp turn out as high as 20 tons a day of a product containing 15 per cent. water-soluble potassium oxide. One powder company has a kelp plant which turns out 18 tons of potash a day as a by-product of acetone manufacture. It has been suggested that the by-products of various industries might be a fruitful source of potash. The possibilities of cement manufacture and flue-gas dust have been demonstrated at Riverside, Cal. It is possible that from these sources alone we might get 72,000 tons of potassium oxide per year, or nearly one-third of our antebellum importations from Germany. It is estimated that it would cost $30,000,000 to equip all our cement factories with recovering devices and we would save $12,860,000 annually in potash. In addition, dust from blast-furnace gases might be made to yield 125,000 tons of potassium oxide, or half our normal import.

The recovery of potash from beet-sugar waste liquors is attracting attention. A large amount of potash is contained in the six million tons of sugar beets produced in a season. Such a crop contains some 7,700 tons of nitrogen, 3,780 tons of phosphoric anhydride and 18,180 tons of potassium oxide. Approximately 60 per cent. of the nitrogen and 90 per cent. of the phosphoric acid and potassium oxide are extracted with the sugar in the beet-sugar process. The remainder stays with the pulp, which is completely utilized for live-stock feeding. Phosphoric acid is completely eliminated in the purification of the sugar juice and at present is wasted. A part of the nitrogen also is lost in the same way. The potash, however, proceeds through the process into the final molasses and mother liquors from which further sugar cannot be recovered by direct crystallization, partly because of the presence of these potash salts. Thirty-three thousand tons of such molasses would be produced from the beet-sugar crop mentioned, containing about 15,000 to 16,000 tons of potassium oxide. Approximately 40 per cent. of this molasses is used for stock feeding. The remainder of the production, or perhaps 45 per cent. of the total, is desugarized by dilution, cooling, and the addition of lime, which precipitates the sugar as a calcium compound. Ninety per cent. or more of the sugar is then recovered by filtration, the filtrate containing practically all the potassium originally present in the molasses. Other methods also are used for sugar recovery, and their waste liquors ultimately retain the potential potash supply. If these waste liquors are used to irrigate lands, the fertilizer value can thus be completely utilized, but this is not always possible. Some efforts are being made at present to dry these dilute solutions by evaporation in vacuum drum driers. The dry material readily absorbs moisture and must therefore be mixed with other material to prevent this. The expense involved in evaporation at plants where fuel is not plentiful is a serious item and would be commercially justified only while potash prices remain at present war levels. At least one plant, however, for this purpose is now in operation. At the present time only about 10 per cent. of the potash contained in the sugar-beet crop is returned to the farms in pulp. The potash remaining in the molasses is distributed as follows: to alcohol plants, 10 per cent.; molasses feeds, 40 per cent.; desugarized residues, 45 per cent.; leaving the amount in control of the manufacturer only about 7,000 tons of potassium oxide. Of this amount 20 per cent. is sent directly to the soil as factory sewage; concentrated to 50 per cent. dry substances and sold to the fertilizer factories, five per cent.; concentrated and calcined to a crude ash, five per cent.; discharged into streams and now lost, 70 per cent. Beet-sugar molasses contains potentially many other recoverable substances. In Europe by its distillation some 5,000 tons of potassium cyanide and 5,000 tons of ammonium sulphate have been manufactured per annum.

What this country needs for the upbuilding of its potash industry is not only research but also assurance that proper legislation will be enacted to prevent "dumping" methods by Germany after the war. It is believed that thorough investigation of known potash in dust waste in this country without further exploration will show that the investment for its recovery would not exceed the investment required to produce the mined product we import from Germany. We would thus reclaim an irreparable waste and conserve Germany's product for the future. This is an important matter to us, for those in high position in Germany have recently stated that Germany's acquired efficiency in nitrogen fixation due to war will drive Chilian nitrate from the world's markets and that this, together with her potash, will enable Germany to dictate what the world shall eat. Our rock phosphate should influence this matter.

Synthetic Indigo.—On Jan. 10 the first American commercial synthetic indigo was produced in a trial factory batch, the materials having gone through all of the 22 or 23 manufacturing steps to the amount of some 300 lb. The manufacturers start with aniline and use chloracetic acid. The plant is arranged to produce 5,000 lb. to 6,000 lb. per day and is in the process of development. Dibrom indigo of brighter shade is also being made.

Synthetic Alizarine and Other Dyes.—Throughout the year there has been in operation in Tennessee the first synthetic alizarine plant in this country.

The development of the manufacture of other dyes and such specialized chemicals continues with unabated zeal. From a mere handful of plants at the war's start we now have over 90 plants making crudes and intermediates and 80 making artificial dyes. Seventy-five per cent. of our needs are supplied and we even export much abroad. There is still a shortage of some special dyes not used in quantity. (See also XVIII, *Manufactures.*)

Titanium.—Titanium oxalate has long been used as a mordant, probably because of the fact that titanium salts hydrolyze (precipitate by water) so readily and completely. The oxalate is preferred because that salt is more stable; for the slightest heating decomposes the sulphate. The former material is particularly valuable in leather dyeing. If the sulphate is mixed with oxalic acid, however, undue or too rapid hydrolysis is prevented and the mixture rendered very stable. The problem of manufacture consists in getting titanium from the ore, preferably by fusion with sodium bisulphate, a waste product from nitric-acid manufacture, and then stabilizing this with some oxalic acid. The sources of titanium appear to be extensive and the properties of the hydrated oxide seem to indicate that it may be developed into a substitute for white lead in paint. It would be non-poisonous and not so liable to darken and probably would be more stable. Titanium, though classed as a rare metal, has long been used in steel and other alloys and in ceramic ware and to give the creamy tint to artificial teeth.

Miscellaneous Progress.—The growth of the realization of the importance of chemistry in the development of the industries is shown by the increased use of chemists by the great railways for the instruction of wisely selected industries tributary to their lines.

Carborundum brick with less than one per cent. binder are now being made in a kiln like fire brick. They have the same electric conductivity as cast iron. They are used in furnace linings, particularly where there is a tendency to slagging, and apparently do not wear out even under high-pressure boilers, such as those on destroyers. The use of high-silicon irons has pushed the ability to condense nitric acid up as high as about 1,000 lb. per hour per still.

Acetylene plus oxygen will enable the cutting of 9-inch steel bars where a year ago three-inch bars were the limit when air was used. Oxyhydrogen will enable the making of as high as 27-inch cuts. The cutting is done by oxidation of the metal to black oxide, which slags out of the cut. This enables specially devised machines to cut bars simultaneously in shell lengths much more rapidly than machine tools and at lower outlay for equipment. The oxygen is made from water by electrolysis, from air by the Linde (German) method, or by the mechanically superior Claudé (French) low-pressure liquefaction system. The liquid air is then distilled to separate the oxygen from the nitrogen.

The production of ammonium phosphate instead of the bulky acid phosphate of lime or "super-phosphate" began in 1917. The ammonia comes from the atmosphere by the lime-nitrogen route (our first plant) and the phosphoric acid from rock phosphate. This important development, giving a combined and concentrated fertilizer, has resulted from the movement to conserve car resources. Nitric acid is also being made from ammonia over platinum for ammonium nitrate, used in munitions and as a concentrated nitrogen fertilizer.

Ten years ago American laboratory glassware was developed superior to any on the market, but habit and clever advertising kept the German "Jena" glass to the fore as the "standard" glass. The war has forced the use of the American product and accelerated development until now it is breaking into domestic culinary usage where the Germans never made any headway.

High grade paper from wheat straw is being made in the Middle West, thus making a better use of straw than the strawboard hitherto made.

Perkin Medal Award.—The Perkin medal for 1917 was awarded to Ernest Twitchell, whose catalytic process of separating fats into glycerine and fatty acids is used all over the world.

Bibliography.—Among the important non-technical papers of the year may be noted: "Literature of the Nitrogen Industries, 1912-16" (*Jour. of Ind. and Eng. Chem.*, 1917, p. 424); "Nitrate supply for the Government" (*ibid.*, p. 829); "Pyrogenesis of Hydrocarbons" (*ibid.*, p. 879); "American Potash Possibilities" (*Met. and Chem. Eng.*, July 15, 1917, p. 78).

PHYSICS

E. L. Nichols

Volume of Physical Research.—The most notable feature of the year's work in physics is the shrinkage of output due to the war. Most of the foreign journals have continued publication, but their content is reduced to about half the normal amount. This effect is not as yet apparent in America, but it may be expected in 1918, as many of the productive physicists of the country are in war service.

Structure of Matter.—R. A. Millikan (*Philos. Mag.*, xxxiv, 1) has made a new determination of the electronic charge (e), the number of molecules (N) in a gram molecule, and various related constants, under conditions which reduce the uncertainty to a fraction of one per cent. There remains however an unexplained discrepancy between the value for the constant C_2 in the Planck equation for radiation and that obtained by Mendenhall by spectrophotometric observation (see *infra*).

D. T. Webster (*Phys. Rev.*, ix, 484) in a theoretical discussion of the Parson magneton finds that the gyroscopic behavior of such a nonspherical system would be identical with that of an electron in an orbit having the same magnetic moment. The mass of the magneton, under the assumption made by the author, would be $2/C_2$ times its electrostatic energy.

Theoretical physicists at the present time are inclined to deem the electromagnetic theory inadequate for the treatment of radiation and atomic phenomena in general. A. C.

Crehore (*ibid.*, 445), however, in the belief that all the phenomena of nature should find adequate explanation by application of a proper theory of the electromagnetic field in its relations to the individual electrons of the atom, proposes a change in certain terms in the present electromagnetic equations applicable to the electrons. In a subsequent paper (*ibid.*, x, 432) he applies these equations to the space relations of 20 different crystals of the isometric system with results conformable with the known facts.

Heat.—Many determinations of the true temperature of incandescent filaments have been made in recent years by comparing the brightness of the surface with that of a black body at the same actual temperature. In the latest investigation of this subject, by A. G. Worthing (*ibid.*, 277), comparisons were made between the radiation of two carefully determined wave lengths from the surface of a polished tubular filament of tungsten with that from the interior of the filament as viewed through a minute hole in the wall. The true temperature at 1,200° abs. is 56° above the "blackbody" temperature, and the difference increases steadily to 498° at the melting point of tungsten at 3,674° abs. The intensity of radiation from glowing tungsten expressed in watts per square centimetre rises from 5.7 at 1,500° abs. to 98.9 at 2,700°. The emissive power of the metal, which had previously been regarded as independent of the temperature, was found to decrease on heating approximately as an inverse linear function of the temperature.

Another method which has been proposed for the comparison of the temperatures of glowing solids is to find a temperature at which a black body affords a color match on the photometer screen with the light from the surface under investigation. Hyde, Cady and Forsythe (*ibid.*, 395) have subjected this method to careful study. They find that for substances like tungsten and carbon, for which the selectivity of the visible radiation is slight, such a color match is realizable, and that the temperature thus determined, which they call the "color temperature," is slightly higher for tungsten than the true temperature.

Hitherto the highest temperatures artificially produced have been those of the crater of the electric carbon arc under pressure—about 3,700° abs. or 3,427° C. G. P. Luckey (*ibid.*, ix, 129), with an enclosed arc between terminals of tungsten, has recorded a temperature of 5,084° abs. at a pressure of 35 atmospheres. This is more than 1,500° above the melting point of the metal and within 1,000° of the sun. It is the temperature of the hottest portion of the crater at the point where the current leaves the molten tungsten. The melting point of tungsten was found to decrease with pressure from 3,623° abs. at one atmosphere to 3,564° abs. at 35 atmospheres.

C. F. Brush (*Proc. Am. Philos. Soc.*, lvi, 353) has continued his studies of the heat liberated by steel when heated above the temperature of recalescence and quenched by sudden submergence in water. In the case of nickel-chromium steel, instead of the normal curve of cooling, there was a rise of temperature for several hours, then steady cooling throughout the test. This occurred in the case of at least one specimen, when, having been heated above recalescence, it was allowed to cool to about 660° before quenching. Even in this case there was a similar generation of heat, although hardening did not result. When quenched at temperatures below 600° these steels showed absorption of heat, the temperature falling faster than normal. A bar of pure carbon steel under similar conditions showed generation of heat when quenched above the temperature of recalescence. Soft Swedish iron showed no generation of heat even when quenched above the recalescence point, the curve of cooling being strictly normal.

Electricity.—An important chapter in P. W. Bridgman's investigations (*Proc. Am. Acad. of Arts and Sciences*, lii, 571; *Phys. Rev.*, ix, 269) of the properties of matter at high pressures deals with the electrical conductivity of metals. He finds the temperature coefficient nearly independent of pressure even when the metal is compressed to less than its volume at 0° abs. The pressure efficient diminishes as the pressure increases. Bridgman's conception of electrical conductivity is as follows: Perfect conductivity occurs when the atoms are at rest and in contact, as at the absolute zero of temperature. The electrons which serve as carriers of current then pass freely from atom to atom. With rise of temperature, as vibrational disturbances increase, gaps or breaks between neighboring atoms occur, passage of the free electrons is impeded, and electrical resistance begins to be appreciable.

In 1916 (*A. Y. B.*, 1916, p. 638) Tolman and Stewart described a striking experiment in which a coil of copper wire was rotated about its axis at high speed and then suddenly brought to rest. By means of a ballistic galvanometer connected with the ends of the coil a sudden pulse of current was detected at the instant of stopping. In this way the important fact was established that the electrons which act as carriers of the current possess inertia and tend to continue in motion. They have now repeated (*Phys. Rev.*, ix, 164) their measurements with coils of copper, silver and aluminium, and have shown that in all three metals the direction of the pulse of electricity was such as to indicate that the carriers are mobile, negatively charged electrons. They have also calculated the mass of the carriers, which is of the same order as the accepted value for slow-moving, free electrons in space (1/1845 of the hydrogen atom) but somewhat larger, *viz.*, 1/1660 in copper, 1/1590 in aluminium, and 1/1540 in silver.

The rectifying action of electrolytic cells having one terminal of aluminium has been the subject of many investigations. That any electrolyte which liberates oxygen may be used was established by Graetz and Pollak, and that aluminium may be replaced by various other metals has been shown by Schultz. A. L. Fitch (*ibid.*, 15) finds that the action of the cell is most satisfactorily explained by assuming the formation of a double dielectric. On the surface of the aluminium a solid nonconducting layer is deposited which is not decomposed by the reversed current. Over this layer a gas film is formed which diminishes as soon as the circuit is open. The gas film passes the current in one direction, being freely penetrated by free electrons from the metal, but is comparatively impenetrable by the larger ions from the electrolyte, as previously pointed out by Guthe. As the solid coating increases in thickness, a state is reached where local heating by the current occurs and the coating is no longer permanent. The cell then begins to cease to rectify.

C. W. Heaps (*ibid.*, x, 266) has compared the transverse and longitudinal changes of resistance of several metals in the magnetic field and finds the former effect to be greater; also, in accordance with the electron theory of electrical conductivity this increase in resistance is accompanied by a decrease of the mean free path of the electrons in the metal.

Von Ettingshausen and Nernst in 1883 described the reversal of the Hall effect in Bi-Sn alloys when the magnetic field was increased. Alpheus W. Smith (*ibid.*, 358) has extended the investigation to alloys of Bi-Pb and finds a similar reversal. He finds that the suggestion of the earlier authors that this reversal is due to the thermal flow set up in such plates is not justified, and concludes that no satisfactory theory of the effect has as yet been proposed.

T. W. Case (*ibid.*, ix, 305), as the result of an extended search, has added a number of new crystals to the small list of substances, such as selenium, stibnite and cuprous oxide, previously known to have their conductivity increased by exposure to light. A beam of light from an electric arc was passed through a revolving sectored disk and fell upon the crystal to be tested. The crystal was mounted in a 110-volt circuit with an audion amplifier and telephone. A musical tone resulted in cases where the interrupted light caused corresponding periodic fluctuations in the resistance of the specimen. Of 163 materials studied, 17 showed the effect to some extent and six were recorded as "good". The most marked results were obtained with crystals of bismuthinite (Bi_2S_3). Most of the active substances are sulphides containing Bi, Ag, Pb, or Sb.

Magnetism.—S. J. Barnett (*ibid.*, x, 7) has extended his fundamental experiments on the production of magnetization by rotation so as to include nickel and cobalt as well as iron. The later results confirm the conclusion previously reached that molecular currents of electricity in orbital revolution exist in metals exhibiting ferromagnetism; that these currents consist entirely, or for the most part, in revolutions of negative charges (electrons), and that the orbital systems have mass or inertia, so that each orbit tends, like a minute gyrostat, to adjust itself to the direction of rotation of the body. The magnetization of the body is the result of this orientation of the orbits.

E. M. Terry (*ibid.*, iv, 394), by means of a vacuum furnace mounted between the poles of a large electromagnet, has succeeded in measuring the magnetic susceptibility of Fe, Ni and Co from the Curie point to the temperatures of fusion. He finds that with the exception of Ni, in limited regions, Curie's law that the susceptibility is inversely proportional to the absolute temperature does not hold, and that the quantum theory of magnetism as developed by Keeson requires further modification.

When a steady magnetic field is applied to a bar of iron the outer layers are magnetized first and the effect spreads gradually to the interior. Arthur W. Smith (*ibid.*, 419) compares the phenomenon with the heat flux when such a bar is plunged into a hot bath, and he shows by measurements of the time lag of magnetization that the effect may be accounted for by the action of the slowly disappearing eddy currents induced in the iron.

J. R. Ashworth (*Philos. Mag.*, xxxiii, 334), making use of Curie's analogy between the intensity of a paramagnetic material as a function of field strength and temperature, on the one hand, and the density of the gas as a function of pressure and temperature, points out that the relation of ferromagnetism to paramagnetism is analogous to that of a liquid to its vapor. A general expression corresponding to the Van der Waals equation applies to ferromagnetism when the intensity of magnetization is large, and to paramagnetism when it is small. He treats hysteresis on this basis and compares it with the phenomena occurring when a fluid passes without discontinuity from liquid to vapor and *vice versa*.

The problem of unipolar induction, which is as old as Faraday, has recently received attention from Barnett, Fehrle, and Kennard. Kennard (*ibid.*, 179) uses a cylindrical condenser within a solenoid, both capable of revolution either separately or together about their common axis. The results favor the hypothesis of a stationary ether due to Lorentz, and are held by the author, in opposition to the views of Poincaré, Abraham and Barnett, to be fatal to the "moving-line" theory.

Optics and Radiation.—C. E. Mendenhall (*Phys. Rev.*, x, 515) has made a careful redetermination of the constant C_2 of Planck's equation for the relation between radiation and temperature. In this determination a black body was observed at two temperatures, the lower being referred to the melting point of gold, while the higher was connected with the lower by means of the Stefan-Boltzmann law. The value of C_2 (14,400), for which an accuracy of about 0.002 would seem warranted from the details of the experiment, is somewhat higher than that obtained at the Reichsanstalt (14,300) and the values of Coblentz (14,322 and 14,369). Hyde, Cady and Forsythe, however, have recently published a still higher value (14,460). Since C_2 is related to Planck's quantum constant h and the probability constant k, a check may be obtained by comparison with Millikan's determination of these constants by electrical methods (see *supra*). The discrepancies between the electrical values and those obtained by radiation, as Mendenhall points out, demand further investigation.

H. H. Clayton (*Smithson. Coll.*, May, 1917) finds an intimate and definite relation between the fluctuations of temperature in various parts of the world and the variation in solar radiation as recorded by Abbot. Correlation factors were computed, following the methods developed by Karl Pearson for the systematic and unbiased treatment of complex statistical data. The results confirm in a most convincing manner the conclusions of Abbot concerning the reality of the solar variations, about which scepticism had been felt by some students of astrophysics, and would seem to justify the prophecy made by Langley many years ago that measurements of solar radiation would ultimately be of the greatest importance in practical meteorology.

The theory of flicker photometers has long been a subject of discussion. By means of a polarizing photometer, consisting essentially of a double image prism and a rotating Nicol prism, H. E. Ives (*Philos. Mag.*, xxxiii, 360) has been able to determine independently the power of the eye to distinguish differences of brightness and of color under conditions of rapid fluctuation, and to establish definitely that the applicability of the flicker photometer to the comparison of sources of light differing in color is due to the failure of hue discrimination as compared with the discrimination of brightness.

J. G. Priest (*Phys. Rev.*, x, 208) has developed a new method for the photometry of light sources which differ in color. In comparing tungsten lamps with lamps having carbon filaments or with the acetylene flame it has been customary to use carefully selected color screens. Priest finds that by passing the light from one of the sources through a quartz plate between Nicol prisms an excellent color match may be obtained. The spectral distribution for the two beams then becomes almost identical, which is far from being true with the color screens commonly available.

Studies of rotatory polarization have been confined chiefly to the visible and ultraviolet parts of the spectrum. The difficulty of such observations in the infrared is very great, but L. G. Ingersoll (*ibid.*, ix, 1) has devised a method by means of which it is possible to make measurements of an accuracy comparable with that obtained in the visible spectrum. Rays from a tungsten lamp with a flat filament were focussed on the slit of a mirror spectrometer. When a polarizer and double-image prism were placed in the path of the beam, two images were formed on the slit the spectra of which fell respectively on the two strips of a differential bolometer. Any medium capable of turning the plane of polarization, if introduced in the path behind the polarizer, would cause a deflection of the galvanometer in the bolometer circuit. The rotation of the polarizer necessary to restore the balance afforded a measure of the rotatory power of the medium. The rotatory power as far as 2 μ was determined for quartz and for several liquid solutions. Lowry's formula for the relation between the angle of rotation and the wave length was confirmed for the entire region under investigation. Wiedemann's law of the proportionality of natural and magnetic rotations was found to hold with a fair degree of approximation for quartz, limonene and pinene but less accurately for solutions of sugar, tartaric acid and camphor.

The reflecting power of tungsten has been measured by Weniger and Pfund (*Jour. Franklin Inst.*, clxxxiii, 354). At room temperature the radiation reflected increases steadily with the wave length from 55 per cent. at .8 μ to 93 per cent. at 4 μ Upon heating, the reflectivity increases in the red up to 2,056° abs. (by 9.8 per cent. at 0.67 μ), is constant for 1.27 μ, and diminishes for the longer wave lengths. At 4 μ the decrease at 2,056° is 12.5 per cent.

Fluorescence and Phosphorescence.—Wood and Hensalech have ascribed the fluorescence excited in nitrogen to radiation of the Schumann region or beyond. C. F. Meyer (*Phys. Rev.*, x, 575), however, finds that some of the exciting rays are approximately of wave length 1,300 A.

Studies of the fluorescence of preparations of uranyl nitrates differing only in crystalline form and in the amount of water of crystallization, indicate, according to a paper by Nichols and Merritt (*ibid.*, ix, 113) that their spectra vary quite as widely as do the spectra of different uranyl salts. Howes and Wilber (*ibid.*, x, 348), in a later study of four double nitrates, find similar divergencies in the fluorescence spectra which are due to the crystal form.

Nichols and Howes (*ibid.*, ix, 292), with a specially designed phosphoroscope, have studied the phosphorescense of various uranyl salts. Visibility lasts only for a few thousandths of a second, and the law differs from that of other substances, in that decay proceeds more rapidly in the later than in the earlier stages.

X-Rays.—Numerous attempts have been made to determine the efficiency of the production of X-rays, but with widely divergent values. P. T. Weeks (*ibid.*, x, 564), using a Coolidge tube and a lead bolometer of sufficient thickness, has measured the efficiency from 28.3 kv. to 53.9 kv. The input of energy was obtained directly by placing the tube in an oil calorimeter. Weeks finds the X-ray output of the Coolidge tube to increase from 20 joules per ampere-second at 28 kv. to 125 joules at 54 kv. The ratio of this to the energy supplied to the tube varies for this range between 0.00058 and 0.00187. The X-ray output is nearly proportional to the cube of the voltage. When X-rays are absorbed by the air it appears that only a fraction of their energy is expended in ionization.

A. H. Compton (*ibid.*, ix, 29), in a theoretical study of the reflection of X-rays, has developed an expression for the energy of a beam of given wave length reflected from the face of a crystal. His equation, in agreement with the formula derived by Darwin, indicates that the energy depends upon the arrangement of the electrons within the atoms of the reflecting crystal. Compton then considers the possible arrangement which will account for the observed energy. Assuming the number of electrons to equal the atomic number of the substance and arranging the electrons in rings, he is able to find distributions which should give the required energy. The arrangements in question appear to favor Bohr's conception of the structure of the atom rather than that proposed by Crehore in his earlier papers.

H. S. Uhler (*ibid.*, 325) has made a critical examination of the law of X-ray line spectra, based upon the measurements of Siegbahn. He decides that Moseley's law, "as distinguished from his epoch-making association of the chemical elements with atomic numbers", does not fully represent the experimentally determined wave lengths for the entire range now known. An empirical formula with four parameters is proposed.

J. J. Thomson and later Bergen Davis reached the conclusion that the emission of X-rays should be proportional to the atomic weight of the metal and to the square of the difference of potential impressed upon the electrodes of the tube. Experimental results have in general confirmed these relations. C. S. Brainin (*ibid.*, x, 461), in observations upon six metals, finds agreement with the above relation for molybdenum throughout the entire range of the experiments: for Pt and W above 20 kv.: for Cu, Co and Ag below the critical voltage of K radiation. Above the critical voltage the emission from Cu and Co is more rapid, from Ag less rapid, than the law demands.

Ionization and Vacuum-Tube Phenomena.—Whether the light from the glowing vapors in an electric arc is produced by the recombination of the ions or by the breaking up of the atoms in the process of ionization has been a matter of controversy. C. D. Child, whose earlier experiments favored the former view, has returned to the subject in an investigation of alternating arcs (*ibid.*, ix, 1). He confirms the result of Fleming and Petaval, *viz.*, that the minimum of light from the gases in a carbon arc occurs about one-twentieth of a cycle after reversal. The same phenomenon was observed with flaming arcs and the alternating mercury arc. Child points out further that if the process of recombination be the cause of radiation, the intensity must increase with the number of ions. From measurements of the conductivity, current and potential difference, he found such a relation to exist.

When the corona appears around an axial wire serving as an electrode in a vacuum tube, a sudden increase in the pressure of the gas is observed. To determine whether this change is due to heat, as recently maintained by Arnold, or whether, as previously suggested by Farwell and Kunz, it is an ionization effect, E. H. Warner (*ibid.*, x, 483) describes experiments by means of which it is possible to distinguish between the gradual heating effect and the very rapid changes due to the corona. He considers the latter effect, which is accompanied by an actual momentary cooling of the gas within the tube, as probably due to the sudden production of ions.

When mercury vapor is bombarded by electrons having more than a critical speed, a single-lined spectrum is produced, and, as has been shown by McLennan and Henderson, a similar result may be obtained with cadmium, zinc and magnesium. Franck and Hertz had given about 5 v. as the minimum voltage for such a spectrum. T. C. Hebb (*ibid.*, ix, 371) finds that the line in question (2536.72 for mercury) can be produced at much lower voltages provided the electronic discharge is sufficiently dense, and also that at voltages above 12.1 v., where the many-lined spectrum usually occurs, the single line may be brought out provided the bombardment is sufficiently sparse. Millikan (*ibid.*, 378) is inclined to doubt the existence of the one-lined spectrum. He points out that according to Bohr's theory, weaker lines of longer wave length should always be present. Their visibility on the photographic plate depends, of course, on the conditions of the experiment. Van der Bijl (*ibid.*, x, 546), who has also considered the bearings of the quantum theory upon Hebb's results, does not think them incompatible with Bohr's view.

A. T. Waterman (*Philos. Mag.*, xxxiii, 225) concludes from measurements of various salts that no positive emissions are given off by AgCl, AgI, $PbCl_2$, $PbBr_2$, $PtCl_2$ or $CuCl_2$. In the case of Cu_2Cl_2 evidence was found of the emission of doubly charged, positive ions of copper. Waterman has also studied the electrical properties of molybdenite. He finds the resistance at low temperatures to be very nearly an inverse exponential function of the absolute temperature and a function of the applied potential difference. The conduction in this mineral appears to be carried on mainly by electrons.

Langmuir recently described a monatomic form of hydrogen liberated from the tungsten or platinum target of a discharge tube at very low pressures, the free atoms forming a thin layer upon the glass walls of the bulb. Duane and Wendt (*Phys. Rev.*, x, 116) have since produced another and very different modification of this element by subjecting especially purified hydrogen to the action of *alpha* rays. The product is polyatomic and is suspected of being related to ordinary hydrogen as ozone is to oxygen. Because of its rapid reversion to H_2, which occurs within a few minutes, the molecular weight has not yet been determined. It reacts with S, P and As, attacks mercury with the formation of a yellow crystalline salt and reduces potassium permanganate to the dioxide. The new hydrogen may be passed through a plug of glass wool without being modified, and is liquefied at the temperature of liquid air, by which means it can be separated from ordinary hydrogen.

Acoustics. — Until very recently Webster's device for the production of a standardized tone of precise, absolute measurements of sound was almost the only available instrument. For the production of a tone pitch and loudness of which are under control, Arnold and Crandall (*ibid.*, x, 22) have developed an apparatus based on the observation made by Braun in 1898 of the acoustical effects produced by alternating currents. The intensity of the sound waves from such a device can be computed from the thermal and electrical constants. The measurements were made with a special form of telephone transmitter designed by E. G. Wendt (*ibid.*, 39). The diaphragm of this instrument was of thin steel stretched almost to the elastic limit. It formed one plate of an air condenser, and the variations in the capacity of this condenser when the diaphragm was in vibration enabled the measurement of the intensity of the sound waves in absolute units.

XXIV. THE BIOLOGICAL SCIENCES

ZOÖLOGY

David H. Tennent

General.—An important development in American zoölogy has been in the increased distribution of the journals in which the greater part of the investigations of American zoölogists is published. The Wistar Institute of Anatomy and Biology of Philadelphia, with the coöperation of The American Society of Anatomists and The American Society of Zoölogists, now distributes the journals published by it to all of the institutions in North America in which there is an interest in biological research, and independently to the libraries of Universities, Academies and Scientific Societies of Central and South America, Europe and the Orient. The interest in these journals has been sufficiently extensive to lead to the publication of special Japanese and Chinese editions. Another development has been in the publication and distribution of abstracts, with bibliographic references, prior to the appearance of the full text.

Through these agencies, together with the facilities afforded by other foundations for research, by learned societies and by departments of the government, the results of the work of American biologists have a much more nearly adequate distribution.

Trend of Research.—The number of strictly morphological papers, save those in the cytological field, has been small. There has been a continued interest in the growth of tissues in various media, in vital stains, and in physiological processes, especially with reference to the possibility of their modification and control, and a very intense interest in the determination of the chemical nature of these processes.

Systematic Zoölogy.—The splendid memoir by Howard, Dyer and Knab on "The Mosquitoes of North and Central America and the West Indies" (*Carnegie Inst. of Wash., Pub.* 159) has been completed by the publication of Part II of the systematic portion of the work.

Cytology.—Chambers (*Am. Jour. Phys.*, xliii; and *Jour. Exp. Zoöl.*, xxiii) has described a periodic reversal of the sol to the gel phase during cell division. The attraction sphere increases in size by reason of the flowing of liquid into the sphere from all parts of the cytoplasm; the astral rays seem to be the channels through which the flow occurs. Wieman (*Am. Jour. Anat.*, xxi), in his study of human spermatogenesis, has examined material from both the negro and the white. The number, 24, two of which are presumably an x y pair, and behavior of the chromosomes are the same in both races. His results more nearly confirm those of Guyer and of Montgomery than they do those of von Winiwarter. McClung and his associates (*Jour. Morph.*, xxviii and xxix) have given a fine discussion and a detailed consideration of many important features of the chromosomes and their behavior during division, in several of the *Orthoptera* and in one of the *Diptera.* McClung has considered multiple chromosomes and their participation in unexpected numerical reductions. He has shown that the composition of a chromosome can be understood fully only when its genetic history is known, and that the theory of the individuality of the chromosomes is strengthened by these instances of numerical variation. Wenrich has added new evidence of the occurrence of parasynapsis and has obtained some evidence in support of the idea that chromosomes are constant in their internal organization. Holt has shown that during metamorphosis the number of chromosomes in the cells of the pupal intestine of the mosquito is considerably increased. She believes that this is correlated with a method of providing food for the support of the organism during metamorphosis. Carothers has demonstrated the constancy of the chromosomal complex and the fact that the place of attachment of the spindle fibre remains constant. Whiting, working on the germ cells, and Hance, on the somatic cells of *Culex pipiens*, have concluded that the diploid number of chromosomes is six, the homologous chromosomes tending to be grouped in three definite pairs. Richards (*Biol. Bull.* xxxii) has found that in *Fundulus* the chromosomes can be traced from the metaphase of one cell generation through all of the stages of mitosis and interkinesis, as continuous structures which give rise to the prophase chromosomes of the next mitosis. The chromosomal vesicles become closely applied to one another in the resting nuclei but maintain their unity of structure.

W. H. and M. R. Lewis have continued their work with tissue cultures. In papers of joint authorship (*Anat. Rec.*, xiii; and *Amer. Jour. Anat.*, xxii) they have shown that in the mitoses in mesenchyme cells the variations in the duration of any one phase is one of the most characteristic features of cell division and is apparently dependent on individual cell differences, and that in cross striated muscle dedifferentiation, or return to a more embryonic condition, is followed by the formation of protoplasmic buds which grow out from the ends of the old fibres. They have concluded that the factors involved in the formation of these muscle buds are probably the same in tissue cultures and in regeneration. M. R. Lewis (*Carnegie Inst. Wash., Pub. 226*) has found, concerning the development of connective tissue fibres in tissue cultures, that fibrils develop as delicate lines of the exoplasm of the cell, become gathered into bundles which pass from cell to cell and that the bundles become fibres. There is no evidence that mitochondria take part in the formation of fibrils or fibres.

The number of papers dealing with mitochondria is large, but little additional information regarding their function has been gained. Duesberg (*Am. Jour. Anat.*, xxi) has urged the idea that protoplasm consists of a ground substance and the substance of the chondriosomes. Saguchi (*Jour. Morph.* xxix) has concluded that in ciliated cells the ciliary apparatus is derived from mitochondria. In general the papers, Casteel (*Jour. Morph.* xxviii), Plough (*Biol. Bull.*, xxxii) and Shaffer (*ibid.*) lead to the conclusion that the mitochondria are to be regarded as differentiation products and that there is little evidence of their genetic continuity.

M. R. Lewis (*Anat. Rec.*, xiii) has presented evidence on the effect of vital stains upon the eggs of several marine animals and has brought out the fact that unfertilized eggs and later stages of development, react to some stains in the same manner as the tissue culture cells of the chick. There are granules which stain specifically with different vital stains. Cobb (*Science*, xlvi) has shown that the nematodes offer excellent material for work on intra-vitam color reactions and has contributed valuable suggestions regarding the method of obtaining proper illumination for work of this kind. Woodruff (*Biol. Bull.*, xxxiii) has presented data showing that endomixis is a normal periodic phenomenon which occurs in all races of *Paramoecium aurelia*. Young (*Jour. Exp. Zoöl.*, xxiv) has given evidence for the idea that endomixis can be produced experimentally by the use of the end products of metabolism and by increasing the rate of metabolism. He has concluded that it is not a necessary accompaniment of temporary depression and is not necessarily followed by rejuvenation.

Embryology.—F. R. Lillie (*Jour. Exp. Zoöl.*, xxiii) in a paper on the free-martin (the sterile female in two-sexed twins of cattle) has presented data showing that the twins of cattle are derived, so far as the evidence has shown, from separate fertilized eggs and that the embryonic membrane of such twins fuses at an early stage, bringing about an anastomosis of the blood vessels of the two individuals. If one is male and the other female the sex hormones in the blood of the male prevent the full development of the reproductive system of the female and the female is sterile. There is a rather widely spread superstition that this sterile condition applies to the human female, twin-born with a male. Not only is there no basis for such a belief, but there is ample evidence for the statement that females born cotwin with males are as likely to have as many children as the females belonging to the general community. Chapin (*Jour. Exp. Zoöl.* xxiii), in a microscopic study of the reproductive system of foetal free-martins, has shown that there is much variation in these organs due to the time at which the interstitial secretion of the male embryo first enters the circulation of the female embryo, and to the amount of secretion which may be introduced. Sabin (*Carnegie Inst. Wash., Pub.* 226), in an account of the origin and development of the primitive vessels of the chick and the pig, has shown that is practically every chick-embryo observed, new angioblasts can be seen differentiating and joining the older angioblasts up to a certain time. The phenomenon becomes less and less frequent as older stages are studied. Jordan (*Carnegie Inst., Wash., Pub.* 251) has traced the paths of migration of the primordial germ cells of the Loggerhead turtle from the yolk sac endoderm to the future sex glands. Kuntz and Radcliffe (*Bull. Bur. of Fish, Doc.* 849) have given accounts of the embryology and larval development of twelve teleostean fishes, that will be useful.

Experimental Embryology.—Conklin (*Jour. Exp. Zoöl.*, xxii) in a study of the polarity of the egg of *Crepidula* has reached the conclusion that the fundamental polarity is in the spongioplasm (the more rigid part of the protoplasm), and that this polarity is not changed by centrifuging. He has concluded further that orientations of development are largely determined by the structure and activities of the spongioplasm. Gould (*Jour. Exp. Zoöl.*, xxiii) in his study on sex in the hermaphrodite mollusc *Crepidula plana* has determined that the male and female phases are completely separated from each other. The primordial male and female germ cells are both present in the gonad in all periods of life, from the post-larval up to the adult female phase. The growth of the animal during the period when male development may occur depends in part on the amount of movement of the animal, the amount of space for the extension of the mantle and on the season of the year. The male phase will not appear in the life of an individual unless a larger individual of the same species is near. The female phase will always occur whether there has been a male phase or not. Uhlenhuth (*Jour. Exp. Zoöl.*, xxiv) by a series of experiments with interspecific grafts in *Amblystoma* has been able to demonstrate that grafts of skin and eye showed, with regard to metamorphosis, the same time relation as on a host of the same species. Individual types of yellow spots on the skin of one species held to type when grafted on another individual whose skin develops yellow spots of another type.

General Physiology.—Harvey (*Carnegie Inst., Wash., Pub.* 251) has compiled his earlier results with an account of his more recent researches on the chemistry of the production of light in luminous organisms. In all luminous organisms a definite substance undergoes a chemical change, and if free oxygen is present light is produced. He has called this oxidizable substance *photogenin.* Oxidation may take place within or without the cell, or may be continuous in some cases, while in others it is the result of stimulation. In some forms a second substance, *photophelein*, may be detected. In animals in which this cannot be demonstrated both substances are probably present in equal amount. Whenever photogenin and photophelein in solution are exposed to free oxygen, light is produced, and both substances disappear.

A number of papers on the influence of the environment on protozoa are of considerable interest. That of Hogue (*Jour. Exp. Zoöl.*, xxii) on the effect of media of different densities has shown that the amoebae raised in a 2.5 per cent. agar medium are large, flat and have few pseudopodia; those in a 0.5 per cent. agar medium are small and have small irregular pseudopodia; while those in media of densities between these extremes grade in character from those of the densest to those of the least dense media. Shaeffer (*Biol. Bull.*, xxxii) has concluded that amoebae are positive, negative or indifferent to light depending on circumstances. Hyman (*Jour. Exp. Zoöl.*, xxiv), working under Child's direction, has made the important discovery that an amoeba is temporarily differentiated into anterior and posterior ends; the region or regions of highest susceptibility being the anterior end or ends as in other organisms. The most recent pseudopodia are the most susceptible. A further conclusion is to the effect that amoeboid movement must be due to alterations of the colloidal state. Hargitt and Fray (*Jour. Exp. Zoöl.*, xxii) have shown that paramoecia thrive better on a mixed diet of bacteria than on pure cultures of any single kind. The only bacteria in pure culture that approached mixed cultures as a satisfactory diet were of the species *Bacillus subtilis.* Shumway (*Jour. Exp. Zoöl.*, xxii) has determined that thyroid feeding induces a profound increase in the division rate in paramoecia, but that it causes a disturbance of the excretory system, the most remarkable effect being an increase in the number of contractile vacuoles. Hance (*Jour. Exp. Zoöl.*, xxiii), in a study of a race of paramoecia having extra contractile vacuoles, has concluded that the number of vacuoles may be increased by the rate of division and the presence of katabolic products in the environment.

Lund (*Jour. Exp. Zoöl.*, xxiv) has taken up a subject of great interest in his attempt to determine the nature of the physico-chemical changes which constitute structural regulations in the cell. In his study of *Bursaria* he has reached a conclusion to the effect that dedifferentiation followed by differentiation is a normal process and at least from a morphological standpoint may be considered reversible. The reversibility of many processes in living matter is one of the fundamental dynamic characteristics of organisms. Lund holds that proof that living cells normally contain or can develop a mechanism for a reversible process of cleavage and synthesis of their own proteids, is practically complete. The discoveries of W. H. and M. R. Lewis and of Chambers, noted above, lend themselves to this evidence.

Whitney (*Jour. Exp. Zoöl.*, xxiv), in his work on the control of sex in rotifers, has concluded that an excess of oxygen in the culture-water does not directly affect a mother and cause her to produce male-producing daughters, but by affecting the conditions that influence an increase or decrease of the microörganisms which constitute the food supply, may indirectly cause her to produce either male producing or female producing daughters.

A large number of papers dealing with the theory of sex are of great interest. Those of Goldschmidt (*Jour. Exp. Zoöl.*, xxii, and *Biol. Bull.*, xxxii) are of a general nature and deserve very careful consideration. Goldschmidt has advanced the idea of intersexuality and holds that both sexes contain the factors for each sex. Which factors become potent depends on the quantitative relations of the two sets of factors. He has expressed himself in support of the idea that the chromosomes act as adsorbens for enzymes which constitute the chemical basis of heredity. In the second paper mentioned, Goldschmidt shows from his own work and from the work of other investigators that we may expect to obtain either males or females or both sexes from parthenogenetic eggs, depending upon the zygotic character of the race. The lack of space in this review prevents the proper elaboration of this idea. Riddle (*Science*, xlvi) from his work on pigeons has concluded that femaleness in the egg stage is accompanied by low metabolism, a lower percentage of water and a higher total fat and phosphatides content; while maleness is accompanied by a high metabolism, a higher percentage of water and a lower total fat and phosphatides content. Loeb (*Biol. Bull.*, xxxiii) has determined that overfeeding, if pronounced, prevents the maturation of the follicles in the ovaries of guinea-pigs and in the large majority of cases leads to the production of hypotypical ovaries. Underfeeding leads to a premature solution of the granulosa cells. Pearl (*Jour. Exp. Zoöl.*, xxii) has studied the question of experimental modification of the germ cells in the domestic fowl by ethyl alcohol and related substances. He found that the treated birds gained in weight 9.9 per cent. over the untreated; that neither the total amount nor the distribution of egg production were significantly affected by the treatment; that the proportion of fertile eggs was reduced in matings in which one or both individuals had been treated; that the pre-natal mortality was smaller in the case of offspring from matings in which one or both parents had been treated; and that the post natal mortality at all ages was lower in the case of offspring from treated parents. The sex ratio was not visibly affected by the treatment. The treatment rendered many germ cells incapable of forming zygotes. Allen (*Science*, xlvi) has found that absence of the thyroid gland in the larva of the frog does not affect the development of the gonads or germ cells up to the time of the sexual maturity of the male, nor does it hinder the development of the ovary and ova up to the time when the ova are visible to the naked eye. The soma is profoundly influenced by the removal of the thyroid. Swingle (*Biol. Bull.*, xxxiii) has obtained results unlike those of Gudernatsch (*Am. Jour. Anat., 1914*), in that feeding thymus gland, either in the fresh state or in powdered form, to frog larvæ did not accelerate the growth processes nor retard the metamorphosis of these animals. Boring and Pearl (*Anat. Rec.*, xiii), from a study of the interstitial cells in the testis of the domestic fowl, found that characteristic, true interstitial cells are neither a necessary nor a constant element in the structure of the testis. They find it difficult to suppose that they have any causal influence upon secondary sex characters.

Rasmussen (*Am. Jour. Anat.*, xxii) has shown that seasonal changes in the size and number of interstitial cells in the testis of the woodchuck are to be correlated with hibernation and with the season of sexual activity.

Goldfarb (*Biol. Bull.*, xxxii) has continued his work on fused larvæ in Echinoderms and has concluded that the giant larvæ which he obtained from embryos of *Arbacia* are not dependent upon blastomeric symmetry of the two fusing numbers. Even when the axes of the larvæ are not parallel and not symmetrically placed, pairs nevertheless gave rise to single giant larvæ. Medes (*Jour. Morph.*, xxx) has given a careful account of the effects of changes in the constitution of the sea water on the development of *Arbacia* larvæ. Moore's (*Biol. Bull.*, xxxiii) results in an experimental study of the *Arbacia* egg are contrary to the view that a spermatozoan carries a substance necessary for development into an egg. The egg, in his opinion, possesses all the essentials for development. R. Lillie (*Am. Jour. Phys.*, xliii), in a discussion of the hypertonic treatment given an egg in methods of parthenogenesis, has advanced the opinion that what is essential in the effect of hypertonic treatment is not that it should follow or precede membrane forming treatment, but that it should rectify a deficiency in the supply of certain structure forming materials in the egg.

Nakhara (*Jour. Morph.*, xxix) has given some interesting results on a study of the physiology of the nucleoli in the silk glands of certain insects. A portion of the nucleoli migrates into the cell body, and forms a part of the secretion products of the cell. It is thus probable that the nucleolus may take an important part in the secretory activity of the cell. Parker (*Jour. Exp. Zoöl.*, xxii and xxiv) has contributed a series of papers involving a prolonged study of the nervous system in sea-anemones. He has shown that there is a general diffuse condition of the transmission system, but that there is evidence of a degree of specialization. There are probably independent receptors and also relatively independent transmission tracts.

Mast (*Jour. Exp. Zoöl.*, xxii) from a study of the relation between spectral color and stimulation, in the lower organisms, has found that in all of the species studied certain spectral colors are more efficient as stimulating agents than others, his conclusions being in agreement in general, although not in detail, with those of other investigators in this field. He found no evidence indicating that stimulation is independent of luminous intensity. Loeb and Wasteneys (*Jour. Exp. Zoöl.*, xxii) in a reëxamination of the applicability of the Bunsen-Roscoe law of photochemical reactions to the phenomena of animal heliotropism, gained results which confirm their earlier conclusions regarding photosensitive substances in animals and plants. Mast's work enabled him to draw no conclusions regarding the nature of the chemical processes associated with the responses to stimulation.

Hickernell (*Biol. Bull.*, xxxii) has made a very interesting study upon the effect of dessication in rotifers. He has found that no protecting membrane is formed when drying begins. Metabolism goes on slowly in the dry condition as is evident by changes in the wall of the digestive tube. During dessication the chromatin moves to the periphery of the nucleus and the cytoplasm becomes more dense, the change in position of the chromatin facilitating cell oxidations. During the recovery from dessication reverse cytological changes take place.

Adaptation.—Longley's (*Jour. Exp. Zoöl.*, xxiii) studies upon the biological significance of animal coloration are especially important. In his work with fishes he found that color changes tend to assimilate fishes with their surroundings; that specially defended types are not unlike others in pigmentation nor inferior to them in their ability to effect adaptive color adjustments. He has found no evidence that brightly colored species enjoy greater immunity from attack than their more somber hued fellows. His experience impels him to reject the hypotheses of warning and immunity coloration.

BOTANY

B. M. Duggar

General.—Aside from the usual Convocation Week meetings of botanical societies, the most important assemblage of botanists during the year was effected in connection with the exercises in commemoration of the dedication of the new laboratory building and plant houses of the Brooklyn Botanic Garden. This meeting was held April 19-21, and besides addresses significant of the purposes and work of the Garden, the programme included about 40 invitation scientific papers. Thus far an effect of the war on the productive work of American botanists has not been felt.

An epoch is marked in the appearance of Jeffrey's *Anatomy of the Woody Plants*. In the 40 years which have elapsed since De Bary's *Comparative Anatomy of the Vegetative Organs of the Phanerograms and Ferns*, anatomy has become immensely more important as a key to phylogenetic relationship; therefore, the comparative study of extinct and existing plants and the authoritative summary which this work of Jeffrey's represents is both timely and inspiring. Morphological studies upon the Gymnosperms have shown unprecedented activity during the last 10 years, necessitating a revision of the *Morphology of Gymnosperms* by Coulter and Chamberlain. This is a standard work, the revision of which will be welcomed by all students and teachers in this field. The appearance of Part II of Ganong's *Textbook of Botany* maintains the high standard of Part I previously mentioned (*A. Y. B.*, 1916, p. 650), and it exhibits a commendable selection of morphological type material suitable for an introductory college course in which biological studies enter into the logical scheme of a broad educational training. An interesting endeavor to make practical a course in botany (Angiosperms), offering material in taxonomic sequence, is Robbins' *Botany of Crop Plants*. In addition to the general and morphological treatment, the discussion includes more or less anatomical and ecological matter, the whole suggesting a special application in agricultural courses as well as in curricula emphasizing commerce and finance". The problem of plant distribution is approached by Guppy (*Plants, Seeds, and Currants in the West Indies, and Azores*) through an intensive study of stranded seed and fruit drift, and there is also much information in the mass of notes and discussion of literature to attract the interest of plant geographers—this being also true of the earlier work of the same author.

The new edition (5th) of Hawk's *Practical Physiological Chemistry* is certain to be most helpful to students in the chemical aspects of plant work. In the same general field, and specifically as a "tool for physiological research", employing the methods and suggestions of physical chemistry, is McClendon's *Physical Chemistry of Vital Phenomena.* Such work, together with the various biochemical and physical monographs which have in recent years appeared in England are exerting a wholesome influence on the advance of American plant physiology.

Physiology.—The literature of plant physiology for the year presents an amazing number of titles and it is impossible in the space limits to make reference even to all of the more important of these. Those of interest in phytopathological work and in soils-crop work especially are almost entirely omitted in this account. Using the cryoscopic method, Harris and Lawrence (*Am. Jour. Bot.*, iv, 268; *Bot. Gaz.*, lxiv, 285) have added materially to the interesting data which they have accumulated on the osmotic pressures of plant juices. In these articles materials from the Jamaican montane rain-forest and from the coastal deserts have been used. Waggoner (*Am. Jour. Bot.*, iv, 299) emphasizes the relation between low water content and the resistance of seed to high temperature. Groves (*Bot. Gaz.*, lxiii, 169) presents data in relation to the life-duration of seeds at high temperatures in an endeavor to explain degeneration of air-dried seed at storage temperatures. The influence of an external source of carbohydrates on green plants, investigated by Knudson (Cornell Agr. Exp. Sta., Memoir 9; *Am. Jour. Bot.*, iv, 430), has revealed the ability of these plants to absorb carbohydrates and demonstrated the toxicity of certain forms. Examining five plant proteins, Wodehouse (*Am. Jour. Bot.*, iv, 417) shows that while all are anaphylactogenic no two are immunologically alike. Miss Doubt (*Bot. Gaz.*, lxiii, 209), following up earlier work, gives evidence showing the extreme toxicity of illuminating gas to green plants and indicates certain sensitive species which may be used by florists as indicators of the presence of gas. Bunzell and Hasselbring (*Bot. Gaz.*, lxiii, 225) show that Reed's suggestion of the "mode of action of plant peroxidases" may be explained simply by the fact that oxidation by manganese compounds not reduced to the lowest state is a common phenomena. Employing a new type of osmometer sensitive to the passage of a trace of water, Denny (*Bot. Gaz.*, lxiii, 373) has made quantitative measurements of non-living, semi-permeable plant membranes, chiefly seed coats, determining especially temperature coefficients. From an extensive study of mosaic diseases, Freiberg (*Ann. Mo. Bot. Gard.*, iv, 175) endeavors to show that the cause of the disease is some infective principle, or enzyme, rather than a sub-microscopic organism. Zeller (*Ann. Mo. Bot. Gard.*, iv, 93), from an extensive study, has shown that resin is no safe index of the resistance of wood against fungus action, and hence not an index of durability. Nitrogen fixation in fungi has been studied with refined methods by Duggar and Davis (*Ann. Mo. Bot. Gard.*, iii, 413), the work indicating that the usual mould fungi are incapable of fixing atmospheric nitrogen.

Shreve (*Phys. Res.*, ii, 73) makes a complete analysis of the causes of variation in the transpiring power of the cactus, *Opuntia versicolor.* He relates diurnal changes in water-holding capacity not only to transpiring power but to absorbing power, the latter conditioned by the imbitional forces of the water-holding colloids. As a result of further studies, Loeb (*Bot. Gaz.*, lxiii, 25) finds that in *Bryophyllum* the root-inducing substances have a tendency to collect on the lower side of a horizontally placed stem. When leaves are present both root formation and geotropic curvature are related to the position of the leaf. Forsaith (*Bot. Gaz.*, lxiii, 190) presents data confirming the view that peat (like coal) is a "peaceful sedimentation of wind-blown and drifted plant fragments and minute organisms in the depth of open bodies of water" and not the slow accumulation of generations of plant remains in swamps. The effects of sodium salts upon the absorption of nitrates, phosphates, and potash by wheat seedlings have been studied by Breazeale (*Jour. Agr. Res.*, vii, 407), securing many interesting data regarding the inter-relations of nutrient salts.

Ecology.—The most elaborate work which has appeared for some time in this field is an analysis of the development of vegetation, *Plant Succession* by Clements (*Carnegie Inst. Publ.* 242), an outgrowth of the author's earlier studies in vegetation. This work has been awaited with much interest. The chief viewpoint, or concept, may be epitomized by the expression "formation and habitat are regarded as the two inseparable phases of a development which terminates in a climax controlled by climate." Again, "the basic climax community is taken to be the formation." McLean (*Phys. Res.*, ii, 129) has attempted to derive quantitative data in an experimental study of climatic conditions in Maryland—as related to plant growth. Shreve (*Plant World*, xx, 135) has succeeded in deducing some interesting generalizations in reference to the physical control of vegetation, by way of contrast between important factors in the humid mountains of a tropical island and the arid mountains of a temperate arid region. He has also issued (*Geo. Rev.*, iii, 119) a map of the vegetation of the United States, showing 18 generalized vegetation types indicated by different colors. A new map of the physiographic divisions of the United States, published by Fenneman (*Am. Assoc., Am. Geog.* vi), is likewise useful to plant geographers. A study of the group systems of desert plants at Albuquerque by Markle (*Bot. Gaz.*, lxiv, 177) permits of a comparison between this region of lesser rainfall and that of Tucson, so carefully studied by Cannon.

It is important to note that more and more the work of the United States and Insular forest services is productive of results not only valuable in practical forestry, but likewise of permanent ecological interest. The data now being accumulated on climatic factors will eventually disclose the ecological requirements of many forest types, types at present uppermost in general ecological study. In this connection Boerker's (*Forest Quart.* xiv, 380) history of forest ecology is timely. Special reference to the many papers valuable for both foresters and botanists cannot be included in this account.

Morphology.—Chromosome number and the significance of this as a stabilizing feature in species and mutants of *Oenothera* have been investigated intensively by Lutz (*Am. Jour. Bot.*, iv, 53), who emphasizes many novel relations. Chamberlain (*Bot. Gaz.*, lxiii, 51) descibes the prothallia and sporelings of three New Zealand species of *Lycopodium* and develops interesting morphological comparisons. Spessard (*Bot. Gaz.*, lxiii, 66) has found the prothallia of *Lycopodium* in America, and points out the conditions favorable for their occurrence. Work proceeds slowly towards untangling the interrelations of the woody dicotyledons, as demonstrated by the recent papers of Hoar (*Am. Jour. Bot.*, iii, 415) and of Jeffrey and Cole (*Ann. Bot.*, xxx, 359). No cotyledonary ring is found by Smith (*Bull. Torr. Bot. Club*, xliii, 545) in the embryo and seedling of *Dioscorea villosa*, a plant described as differing materially from the usual monocotyl type, and possibly exhibiting a second cotyledon. Through a study of pollen in various species of *Rosa*, Cole (*Bot. Gaz.*, lxiii, 110) finds great sterility and variability, suggesting their hybrid origin and their unsuitability for mutation studies. Goodspeed and his associates (*Univ. of Calif. Publ., Bot.*, v, 293, 301; vii, 39, 66) have examined critically the morphological and cytological features of certain *Nicotiana* hybrids; likewise seasonal changes and teratological variations in *Trillium*. The development of the archegonium in a moss, *Catharinea angustata,* has been followed by Bryan (*Bot. Gaz.,* lxiv, 1), who finds both apical and intercalary growth for a time, followed later by intercalary growth alone. Wylie (*Bot. Gaz.,* lxiii, 135) shows a remarkable series of specializations in *Vallisneria* related to pollination at the surface of the water, bespeaking a long association with the agency of the surface film.

Morphology and Taxonomy of Thallophytes.—A valuable and complete account of the algae of Bermuda is contributed by Collins and Hervey (*Proc. Am. Acad. Arts and Sci.,* liii, 1), and special attention is directed to the distinctness of the Bermuda flora. Moore (*Ann. Mo. Bot. Gard.,* iv, 271) presents notes, collected during a period of years, on the occurrence of *Chlorochytrium gloeophilum,* found at Cuttyhunk, Mass. The genus *Scenedesmus* is discussed by Smith (*Trans. Wis. Acad. Sci., Arts, Letters,* xviii, 422), who also enumerates the algae in Wisconsin lakes (*ibid.,* 351). Gardner (*Univ. of Calif. Publ., Bot.,* vi, 377) begins an extensive study of new Pacific Coast marine algae, and the first paper reports 11 new species and two new genera. A valuable key to the *Phaeophyceae* of Puget Sound is offered by Muenscher (*Puget Sound Marine Sta. Publ.,* i, 249). Cunningham (*Bot. Gaz.* lxiii, 486) interprets the filament of certain species of *Spirogysa* as being invariably homologous with the sporophyte of higher plants.[1]

Thaxter (*Proc. Am. Acad. Arts and Sci.,* lii, 649) discusses 59 species of *Laboulbeniales,* the majority belonging to the difficult genus *Stigmatomyces* and practically all new forms, occurring on hosts largely from the West Indies, Mexico, and South America. With the added information both from cultural work and from a detailed study of the uredospores, Kern (*Myc.,* ix, 205) presents a revision of North American rusts on *Carex,* discussing 19 species. Arthur (*Myc.,* ix, 55) has reported upon the important collection of *Uredinales* made in Porto Rico by Whetzel and Olive. There are listed 122 species, of which 11 are new. Photographs and descriptions of cup fungi are being continued by Seaver (*Myc.,* ix, 1, 53), and Murrill (*Myc.,* ix, 185, 197) has published further illustrations of fungi. Additional species of *Pholiota, Stropharia* and *Hypholoma* in the region of the Great Lakes are discussed by Harper (*Trans. Wis. Acad. Sci.,* xviii, 392), and the difficult genus *Coniophora* is exhaustively studied by Burt (*Ann. Mo. Bot. Gard.,* ix, 237). Elliott (*Am. Jour. Bot.,* iv, 439) has made an extensive study of the spore characters of *Alternaria* and *Macrosporium* and presents many points of interest to pathologists.

The critical work characterizing the developmental studies on fleshy fungi from the Cornell laboratories is continued in the recent publications, among which may be mentioned that of Blizzard, on the development of some species of *Agarics* (*Am. Jour. Bot.,* iv, 221), and that of Sawyer, on the development of *Cortinarius pholideus* (*Am. Jour. Bot.,* iv, 520).

Taxonomy.—Taxonomic contributions have been perhaps more numerous than in previous years, though it happens that fewer extensive floras or local handbooks have been compiled. It is of special significance to note the completion of Bailey's *Cyclopedia of American Horticulture,* i-vi, containing taxonomic material which may be considered standard reference monographs for various groups of horticultural plants. Particularly important as tropical American studies are some articles appearing in the *Contributions, U. S. National Herbarium,* and a few examples must serve to place this work in appropriate relief. Hitchcock and Chase (*Contr. U. S. Nat. Herb.,* xviii, 258) have brought together a mass of knowledge regarding the grass flora of the West Indies. The work contains adequate keys, some necessary descriptions, and many notes pertaining to the 110 genera and 455 species. The new species described number 17. The Mexican and Central American species of the important genus *Ficus* have been revised by Standley (*Contr. U. S. Nat. Herb.,* xx, 137), who enumerates species and adds 17 new forms, while reducing many earlier names to synonymy. Pittier (*Contr. U. S. Nat. Herb.*, xx, 37) has studied the leguminous genus *Lonchocarpus* of middle America and finds that the wealth of new material necessitates a changed arrangement of species. De Candolle (*Smithson Misc. Coll.* lxviii, 1) has extended our knowledge of the *Meliaceæ* in the Central American region, recognizing 12 species and varieties as new, seven being from Panama.

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[1] Dunn (*Bot. Gaz.,* lxiii, 425) has followed the development of the brown alga, *Dumontia,* and describes in detail the reproductive structures.

Recent numbers of the *North American Flora* treating of the seed plants include two extensive studies. Rydberg (*N. Am. Flora*, xxxiv, 181) continues his account of the *Carduales*, and Standley (*N. Am. Flora*, xxi, 1) gives a very satisfactory discussion of the *Chenopodiaceæ*. In the last mentioned account 223 species are reported upon critically. Sargent's *Plantae Wilsonianae* (*A. Y. B.*, 1916, p. 651) has been brought to completion with the publication of the third volume and will stand as another important monument to the work of the staff of the Arnold Arboretum. *Contributions from the Gray Herbarium of Harvard University* include four numbers representing 19 articles dealing with plants of various groups and from many sections of North America. In addition the members of the staff of the Gray Herbarium have contributed a majority of the current articles in *Rhodora*. Payson (*Am. Jour. Bot.*, iv, 253) has revised the scapose *Drabas* of North America, describing 14 new species and listing 12 other known forms. Continuing his monograph of *Senecio*, Greenman (*Ann. Mo. Bot. Gard.*, iv, 15) discusses the section *Lobati*, including 17 species, 4 of which are new.

Fossil Plants.—In the field of paleobotany significant progress is being made, as clearly indicated by two of the chief works of the year. Berry (*U. S. Geol. Surv.*, Profes. Paper 91) discusses fossil plants of the Lower Eocene floras of southeastern North America, especially of the southern coastal plain, treating 34 orders, of which 29 are Angiosperms, the majority of the new forms being legumes. He also proposes a new classification of vascular plants (*Proc. Nat. Acad. Sci.*, iii, 330) giving greater consideration to fossil forms. In this a new system of phyla is proposed, the Angiosperms constituting one of these. The second part of Wieland's study of the American fossil Cycads is the other important work. Both the anatomical and systematic data are valuable, though many would object to the adoption of the Goebel point of view in morphology.

VERTEBRATE PALÆONTOLOGY

W. K. Gregory and W. D. Matthew

Fishes.—A memoir on "The Fossil Fishes of the English Wealden and Purbeck Formations" by Dr. A. Smith Woodward of the British Museum, published in the *Palæontological Society Monographs* (lxix, Part I), issued for 1915, was but recently received here. It contains figures and restorations of the skull and jaws of *Hybodus basanus*, a primitive shark allied to *Cestracion*, and figures and restorations of some beautifully preserved specimens of the ganoid fish *Lepidotus*. The same author describes a new species of *Edestus* from the Upper Carboniferous of Yorkshire (*Quart. Jour. Geol. Soc.*, lxxii, 1917). This specimen tends to show that the curious saw-like teeth called *Edestus* represent a very specialized modification of the type of ancient shark teeth called *Campodus*.

The fossil fishes in the collection of the United States National Museum are described in an important paper by Dr. Charles R. Eastman (*Proc. U. S. Nat Mus.*, lii, 1917). This collection, although not extensive, is a representative series comprising characteristic species from all of the main geological time divisions from the Ordovician onward. Among the important results of this paper we may note the recognition of a new family named the *Astraspidae*, for the inclusion of some fragments of the body armor of one of the oldest known "fishes", from the Ordovician System near Canon City, Col. These "fishes" were apparently related to the *Os-*

tracoderms of Silurian and Devonian age.

"A Fossil Sailfish from the Virginia Miocene" is recorded by Professor E. W. Berry (*Am. Jour. Sci.*, xliii).

The study of European fossil fish-scales is yielding interesting results to Professor T. D. A. Cockerell (*Am. Naturalist*, li).

"A Bibliography of Fishes", by Bashford Dean, is being enlarged and edited by Charles Rochester Eastman. Two volumes of this veritable treasury of ichthyological references (published by the American Museum of Natural History) have now appeared, comprising in all about 1,420 royal octavo pages and completing the alphabetical list of titles listed by authors' names. Future volumes, now in progress, will contain the subject index, etc.

Amphibia.—Little has been published during the past year on the Amphibians of the Texas Permian, except one important memoir, "The Structure and Relationships of Diplocaulus" by Herman Douthitt (*Contr. Walker Museum*, ii, no. 1, University of Chicago), which has a melancholy interest since its author died soon after its publication. He describes the fine collection of *Diplocaulus* remains secured by Professor Williston's expeditions. In this very curious animal, which is regarded as a highly specialized offshoot of the *Microsaurs*, the head was shaped like a flattened "cocked hat" with two long, pointed projections at the side. The body was very wide and flat, the limbs very small, the tail long and newt-like. The author concludes that it was a bottom-feeder, possibly plowing through the soft mud of pools and streams in search of annelids and other soft-bodied animals.

"A New Labyrinthodont from the Triassic of Pennsylvania" has been described by Dr. W. J. Sinclair (*Amer. Jour. Sci.*, xliii). It is the largest amphibian thus far reported from the Triassic of North America, comparable in size with *Mastodonsaurus* of the Triassic of Europe.

Reptiles.—The reptiles of the Texas Permian continue to supply invaluable knowledge concerning the early evolution of the higher vertebrates. Professor Williston of Chicago University has described complete skeletons of *Labidosaurus* (*Jour. Geol.*, xxv) and of *Sphenacodon*. The former is a specialized member of the primitive order *Cotylosauria*; the latter is nearly related to the long-spined Pelycosaur *Dimetrodon*, although its own spines are but moderately elongate. In an important paper on the "Phylogeny and Classification of Reptiles", (*Jour. of Geol.*, xxv) the same eminent authority traces the rise of the common amphibian-reptilian stock through the "Protopoda", which are so far known only from certain footprints of Upper Devonian age. The primitive reptilian stock early divided into the following series:

> Anapsida (Cotylosauria and their specialized descendants the modern tortoises and turtles).
>
> Synapsida (Theromorpha, or pelycosaurs, etc.; Therapsida or mammal-like reptiles, the latter giving rise to the mammals; plesiosaurs).
>
> Diapsida (reptiles with two temporal arches, such as crocodiles, dinosaurs, rhynchocephalians; this stock gave rise to birds).
>
> Parapsida (including the proganosaurs, ichthyosaurs, lizards, mosasaurs, snakes).

The chief novel feature of this classification is the segregation of the group called Parapsida.

The dinosaurs, which were the lords of the earth in late Mesozoic times, continue to supply material for notable memoirs. A Theropod Dinosaur named *Gorgosaurus libratus* is described by Lawrence M. Lambe of the Ottawa Museum (Canada Geol. Surv Memoir 100). The animal was a biped, related to *Tyrannosaurus*, and with extremely small forearms. *Cheneosaurus tolmanensis*, of the same author, is a less specialized relative of *Corythosaurus*, showing an early stage in the evolution of the casuary-like beak. "A Complete Skeleton of the Horned Dinosaur *Monoclonius*" has been described and beautifully illustrated by Mr. Barnum Brown (*Bull. Am. Mus. Nat. Hist.*, xxxvii).

"The Fossil Turtles of the Uinta

Formation", as described by C. W. Gilmore (*Ann. Carnegie Mus.*, Pittsburgh), supplies an important link in the history of the order.

Birds.—*Diatryma*, a gigantic ground bird from the Lower Eocene of Wyoming, has been described by W. D. Matthew and W. Granger (*Bull. Am. Mus. Nat. Hist.*, xxxvii), from a nearly complete skeleton, a most rare and valuable fossil. The bird, which has no known near relatives, was about seven feet high and of massive proportions, with an enormous head and great compressed beak. The wings were vestigial.

Mammals.—Among foreign publications on fossil mammals which have reached this country are the following: "A Review on the Affinities of the Insectivora", by the veteran Swedish zoölogist, Dr. Herluf Winge (*Vidensk. Medd. fra Dansk Naturh. Foren.*, Bd. 68), description of the Oligocene Rhinoceroses of the vicinity of Marseilles, by J. Repelin (*Ann. Musée d'Hist. nat. de Marseille*, tome 16). These animals, it is held, are related to the short-footed rhinoceroses (*Teleoceros*) of the American Miocene.

The origin of man and the structure, relationships and migrations of the fossil anthropoid apes from the Tertiary of the Old World are discussed in an extensive memoir by Prof. G. L. Sera of Pavia, Italy, (*Atti. Soc. Ital. Scien. Nat.*, lxvi), who, like most authorities, regards *Dryopithecus* and *Pliopithecus* as standing nearest to the direct ancestry of man. An excellent review of the North American remains of prehistoric man is by an eminent French savant, Major Edmond Hue (*Bull. Soc. Préhist.* France, 1917).

American publications on fossil mammals during the past year are fairly numerous. A Paleocene bat skull described by W. D. Matthew (*Bull. Am. Mus. Nat. Hist.*, 1917) carries back the record of this order to the beginning of the Tertiary period. The same author describes the palate and jaws of *Nothodectes*, a small Paleocene mammal allied to *Plesiadapis* of the same age in Europe, possibly allied remotely to the modern tree-shrews. A new Paleocene mammal which is described by J. W. Gidley (*Proc. U. S. Nat. Mus.*, 1917) as a possible relative of the titanotheres is referred to the order Amblypoda by American Museum authorities.

The species of *Notharctus*, an American Eocene Primate, are revised by W. Granger and W. K. Gregory (*Bull. Am. Mus. Nat. Hist.*).

The field work of the U. S. Geological Survey and of the American Museum of Natural History is rapidly clearing up the geological and faunal history of the late Mesozoic and early Tertiary era, when the reptilian hosts gave place to the invading mammals. The late Tertiary succession is being vigorously explored by the staff of the University of California (*Univ. Calif. Publ. Bull., Dept. Geol.*), and further east the Miocene and Pliocene faunas are being explored by the University and Geological Survey of Nebraska. The "Pleistocene Fauna of North America" is the subject of numerous recent papers, by Dr. O. P. Hay (*Proc. U. S. Nat. Mus.*), Chester Stock (*Univ. Calif. Publ. Geol.*) and others. Several new extinct rodents and bats from Porto Rico have been described by H. E. Anthony (*Bull. Am. Mus. Nat. Hist.*, xxxvii). These discoveries have a very direct bearing on the history of Porto Rico during the Tertiary Period.

The "prehistory" of mankind is treated in many recent works. The controversy over the Piltdown (Sussex) remains continues. W. P. Pycraft of the British Museum, replying to Gerrit S. Miller, maintains that the lower jaw *does* belong with the human skull and does not represent a new species of Pleistocene chimpanzee as held by Mr. Miller (*Science Progress*, 1917). The human remains found by Dr. E. H. Sellards near Vero, Florida, together with the formation in which they were discovered, have been studied by many authorities, whose results are presented in the Ninth Annual Report of the *Florida State Geological Survey*. The human remains and pottery are of modern Indian type, but were found in a formation either of late Pleistocene or early prehistoric age.

XXV. THE MEDICAL SCIENCES

ANATOMY

G. CARL HUBER

General Anatomy and Embryology.—F. P. Mall (*Carnegie Inst. Contr. to Embryol.*, No. 10) has investigated the magma réticulé in human embryos in normal and pathological development. He finds that the magma must be viewed as a normal constituent of the human ovum, consisting of delicate fibrils interspersed with nuclei, extending from embryo to chorionic wall and forming a continuous syncytium. An increased quantity of magma indicates that the ovum is pathologic. Mall also (*ibid.*, No. 15) treats of cyclopia in human embryos. He finds that removal, by chemical or mechanical methods, of the structures represented along the line of the raphe of the medullary plate from mammillary bodies to neuropore brings about the condition known as cyclopia. C. R. Stockard and Papanicolaon (*Amer. Nat.*, 1916) present a further analysis of the hereditary transmission of degeneracy and deformities in descendants of alcoholized guinea pigs, finding that the males seem to be more injured than the females, taking as an index of injury the quality of their offspring and descendants. The same authors (*Am. Jour. Anat.*, xxii) note the existence of a typical œstrous cycle in the guinea pig, with histological and physiological changes. Every 15 to 16 days a typical œstrous flow occurs, lasting for 24 hours. Ovulation occurs spontaneously during every heat period, and a correlation exists between the œstrous changes in the uterus and the developmental cycle of the corpora lutea. F. P. Johnson (*Carnegie Inst. Contr. to Embryol.*, No. 19) gives a detailed description of a human embryo of 24 somites, describing the state of development of the various tissues, organs and organ systems.

R. D. Lillie (*Anat. Rec.*, xiii) records a study of the canalis hypoglossi in 305 half skulls, finding it completely divided in 17.0 per cent. on the left side and 11.8 per cent. on the right side. The question as to whether the canalis hypoglossi represents in development three or four neural foramina could not be answered from the material on hand. J. C. Koch (*Am. Jour. Anat.*, xxi) presents a very careful study of the laws of bone architecture, finding that the structure of the femur is based on the mathematical requirements of mechanics, and that the inner architecture is such as to produce the greatest degree of strength with the smallest amount of material; there is a definite relation between structure and stress at every point. J. A. Howell (*Anat. Rec.*, xiii) gives an account of an experimental study of the effects of stress and strain on bone development, concluding that growth of bone in thickness is largely dependent on the action of stress and strain; epiphyseal ossification and union are largely independent of stress and strain. E. Clark and R. H. Lhamon (*ibid.*, xii) present observations on the sweat glands of tropical and northern races. The average number of sweat glands per square centimeter of the skin of the finger in the several races examined is approximately 625. As regards the different races, the results show a greater number of sweat glands in the tropical races than in the northern races. M. T. Burrows (*ibid.*) has made an investigation as to the significance of the lunula, the white crescent at the base of the nail, concluding that the lunula is not due to a structural difference of the nail in this region, but due to the fact that the matrix of the nail is not firmly adherent to the connective tissue stratum, the lunular opacity being due to the reflection of light in this region. H. E. Jordan (*ibid.*, xiii) presents one of a series of studies on the structure of muscle. In this communication the comparative histology of cardiac and skeletal muscle of the scorpion is discussed; close resemblance in structure between cardiac and skeletal muscle is noted, and evidence of derivation of tendon fibrils from myofibrils is recorded. S. Bayne-Jones (*Am. Jour. Anat.*, xxi) reviews critically the literature dealing with heart-valve blood vessels, and presents personal observations. A gelatin-carmin mixture was injected under high pressure and the injected valves cleared; arteries, veins and an anastomosing capillary bed were recognized in the valves.

F. E. Blaisdell (*Anat. Rec.*, xii) presents a comparative anatomic study, based on dissections and histologic examinations, of the sacro-uterine ligaments. The conclusion is reached that the plicae recto-uterini and the musculi recto-uterini are primitive structures, appearing in the vertebrate series before the fibro-elastic suspensorium uteri or a well developed musculus levator uteri. R. K. Oliver (*ibid.*, xiii) urges the recognition of "Jackson's veil," a peritoneal fold of the right iliac region, as a true anatomic structure, formed in development during the passive descent and rotation of the caecum. C. W. M. Poynter (*Univ. of Nebraska Stud.*, 1916) gives a critical review of the literature on arterial anomalies pertaining to the aortic arches and the branches arising therefrom, interpreted in the light of development. R. T. Hance (*Anat. Rec.*, xii) reports on an extended series of tests with fixing fluids, instituted to determine a fluid with optimal fixation for chromosomes. Cold Flemming's solution, to which 0.5 per cent. of urea was added, was found to be an excellent fixative for mammalian chromosomes.

Cytology.—H. L. Wieman (*Am. Jour. Anat.*, xxi) reports an investigation on the chromosomes of human spermatocytes. Material from white and black races was available. It was found that the number and behavior of the chromosomes in the spermatocytes of the white and negro races are the same, and that the second spermatocyte metaphase plate contains 12 chromosomes, one of which can be recognized as a half of the split XY pair. J. Duesberg (*ibid.*), reporting a study of chondriosomes in the cells of fish embryos, presents an account of the form and arrangement of the chondriosomes in different types of tissue cells at different periods in development, and states that the cells in mitosis may be divided into two classes—those in which the chondriosomes are equally divided between the daughter cells and those in which they are not equally divided. B. T. Strongman (*Anat. Rec.*, xii) reports on an experimental study on the relation between mitochondria and discharge of nervous activity, recording that mitochondria are surprisingly constant protoplasmic constituents in nerve cells, and are not materially altered in number, form and size by muscular activity leading to fatigue.

Rhoda Erdmann (*Am. Jour. Anat.*, xxii) gives cytological observations on the behavior of chicken bone marrow in plasma media, finding that the multinucleated giant cells are not of homogeneous origin. They may be transformed fat cells, vacuolated connective-tissue cells, newly emigrated basophile cells or flattened myelocytes, eosinophile and mono- or poly-morphonuclear leucocytes. W. H. and Margaret R. Lewis (*ibid.*) have studied the behavior of striated muscle tissue in tissue cultures, finding that abundant outgrowth of skeletal muscle of the chick embryo (seventh to eleventh day of incubation) can readily be obtained in Locke's solution. The muscle buds reach a maximum the third or fourth day and show less differentiation than the fibres of the explant. There is no indication of sarcostyles. Margaret R. Lewis (*Anat. Rec.*, xiii) presents observations on the effects of certain vital stains upon the development of the eggs of certain invertebrates and fish embryos. Each of the stains used seemed to have an affinity for a certain type of granules. The majority of the so-called vital stains cause the death of the cells more or less rapidly.

G. B. Wislocki (*ibid.*, xii) reports that vital staining of fishes is readily obtained by injecting benzidine dyes into the peritoneal cavity. Makrophages stain slowly; the endothelium of the liver, the reticulo-endothelium of the spleen and the endothelium of the renal portal system are readily stained. A widespread storage of the vital dye on the part of the endothelium of the lymphatics is noted. H. Downey (*ibid.*) has investigated the reaction of blood cells and tissue cells to acid colloidal dyes, and is led to believe that intra-vitam staining with pyrrholblau is a process of ingestion and storage. Lymphocytes and polymorphonuclear cells ingest this dye after they have wandered into the tissues, or in the blood, when the vessel which contains them is isolated from the general circulation. L. B. Arey (*ibid.*, xiii) concludes that though the osteoclasts fail to stain with the vital stain trypan blue, they cannot be regarded as nonphagocytic, since they have been observed to ingest bone cells. Arey also (*Am. Jour. Anat.*, xxii) considers the normal shape of red blood corpuscles and finds that it depends largely on the osmotic pressure of the examining fluid. The evidence supports the conclusion that the biconcave disc represents the normal shape of the mammalian red blood cell. B. H. Pratt and J. A. Long (*Jour. Morph.*, xxix) describe a period of synapsis in the ova of the white rat extending over a period ranging from about seven days before birth to three days after birth. In their designation of stages they follow the terminology of von Winiwater.

Development and Growth.—H. E. Jordan (*Carnegie Inst. Publ.* No. 251) presents an account of the embryonic history of the germ cells of the loggerhead turtle, recording that the germ cells migrate during the second day of development from the yolk-sac endoderm to the lateral border of the zona pellucida, becoming here segregated in two bilateral cords. During the fifth day they migrate into the visceral mesoderm and during the sixth and seventh day to the root of the forming mesentery of the hind gut, and thence, during the seventh to the twelfth day, into the future sex gland. C. W. Corner and A. E. Amsbaugh (*Anat. Rec.*, xii) in a study of œstrus and ovulation in the swine state that ovulation occurs during œstrus independent of coitus, probably on the first or second day. The matured but unfertilized ovum measures 155 to 165 micra; fertilization occurs in the oviduct. H. M. Kingery (*Jour. Morph.*, xxx) gives an account of oögenesis in the white mouse. In the development of the ovary there are two periods of cell proliferation from the germinal epithelium—one before birth, the other from just after birth to about sex maturity. The cell derivatives of the first proliferation degenerate; the cell derivatives of the second proliferation form the definitive ova and their follicle cells. J. T. Paterson and C. G. Hartman (*Anat. Rec.*, xiii) conclude from a study of a polyembryonic blastocyst removed from an opossum that this preparation shows that the ovum of a multiparous mammal may occasionally produce more than a single embryo. O. C. Glaser (*ibid.*, xii) has made a study of the mechanism of morphologic differentiation in the nervous system, finding that brain-tube flexure depends on differential growth, as maintained by His, and that brain-vesicle formation also depends on differential growth and precedes brain-tube flexure. Differential growth to play a *rôle* in this connection must be longitudinally effective. J. A. Badertscher (*Am. Jour. Anat.*, xxii) in a study of the fate of the ultimobranchial bodies in the pig reports that they participate in the formation of the thyroid follicles. The portion of the thyroid gland derived from the structures is small in comparison with the part derived from the median thyroid anlage. R. M. Strong (*Anat. Rec.*, xiii) in a study of the origin of melanin pigment in the feather germs from Plymouth Rock and brown Leghorn fowls concludes that the pigment develops *in situ* in the inner sheath cells and in the cylinder cells of the feather germs, cells of epidermal origin. J. A. Myers (*Am. Jour. Anat.*, xxii) reports on the fœtal development of the mammary gland in the female albino rat, recording that the primary ducts appear about the eighteenth day; on the twentieth day tertiary and quarternary ducts are present, at which time also the nipple anlagen were noticed. R. J. Terry (*Jour. Morph.*, xxix) presents an investigation of the primordial cranium of the cat. The chondrocranium reaches its most complete development in cat embryos of 23 to 28 mm. The anlage and development of the several regions of the chondrocranium are described in detail, the descriptions being based on reconstructions. S. B. Conrow (*Anat. Rec.*, xii) finds that taillessness in rats is not due to accident after birth but to a congenital defect in the vertebral column, as determined by a careful study of the vertebral column after the death of such rats. A. W. Meyer (*ibid.*) presents observations on the intra-uterine death of ova and early-stage embryos in the guinea pig, concluding that the cause of death of such ova is intra-embryonic rather than extra-embryonic. F. P. Mall (*Am. Jour. Anat.*, xxii) offers a discussion of the frequency of localized anomalies in human embryos and in infants at birth, based on a study of the first 1,000 specimens of human embryos in the Embryological Division of the Carnegie Institute. He states that localized anomalies or small monsters are much more frequent in embryos than at birth, and more pronounced and more frequent in pathologic specimens than in normal ones. J. M. Stotsenburg (*Anat. Rec.*, xii) has studied in the albino rat the influence on body growth of isolating the ovaries, recording that both double and single isolation experiments show that the glandular function of the ovary, which affects body growth, is unmodified when the ovary is merely isolated from its connection with the uterus. S. Hatai (*Am. Jour. Anat.*, xxi) has studied the composition of the entire body of the albino rat during the life span, finding that the percentage growth of the solids reaches nearly maximum while the young are still nourished almost entirely by mother milk. The protein content is highest at birth; the fat content rises rapidly during lactation; the organic extractives decrease during lactation and the salts show a slight progressive reduction during lactation, after which they increase steadily. C. M. Jackson (*ibid.*) reports on a long series of experiments instituted to study the effect of inanition and refeeding upon the growth and structure of the hypophysis in the albino rat, finding that during inanition the volume changes in the several lobes of this gland are variable. In young rats held at maintenance the pars anterior is somewhat reduced, the pars intermedia and nervosa somewhat increased. In adult rats in chronic inanition the pars intermedia and anterior appear reduced, while the nervosa appears increased. In the adult rat with acute inanition the pars anterior appears increased and the nervosa reduced.

Internal Organs, Development and Structure.—Alice M. Boring and R. Pearl (*Anat. Rec.*, xiii), as a result of studies on the interstitial cells in the reproductive organs of chickens, conclude that the facts as to the occurrence and distribution of interstitial cells in the fowl are such as to make it difficult to suppose that these cells have any causal influence upon secondary sexual characters. J. A. Myers (*ibid.*) has made a comparative study of the mammary gland of male and female albino rats from late fœtal stages to the tenth week after birth, finding that until about the fifth postnatal week the milk ducts of the two sexes are approximately parallel in their development, though no nipple develops in the male. At the ninth week the milk ducts of the female branch very profusely, while the milk ducts of the male show little further growth.

C. M. Vandenburgh (*ibid.*, xii), in a study of the hypophysis of the guinea pig, describes ciliated epithelium as lining portions of the residual cleft and certain of the colloid vesicles of the pars intermedia. The colloidal substance was thought to be a secretion of the pars intermedia, passing *via* the pars nervosa into the brain. C. E. Johnson (*ibid.*, xiii) presents a study based on reconstructions of the development of the liver in the genus *Citellus;* a description of serial stages in the development of the pars hepatica and pars cystica is presented. J. A. Kittelson (*ibid.*) in a study of the postnatal growth of the kidney of the albino rat records that the renal corpuscles number approximately 15,000 at birth and 29,000 at 12 weeks of age in each kidney. It is estimated that the adult human kidney contains 1,040,000 renal corpuscles and renal tubules. G. Carl Huber (*ibid.*) presents extended observations on the morphology of renal tubules and the duct systems of type forms from the several classes of vertebrates. The observations recorded are based on reconstructions and teased preparations.

J. Sundwall (*ibid.*, xii) reports on a study of the choroid plexuses of the brain ventricles with especial reference to the interstitial granular cells. From a study of fixed preparations it is believed that the secretion of the epithelial cells of the choroid plexus is a vesicular one. Numerous mitochondria are found in these cells. Numerous granular cells, supposedly mast cells, were found in the choroid plexus of the ox. W. S. Miller (*Am. Jour. Roentgenol.*, iv) discusses some of the essential points in the anatomy of the lungs. He defines the unit of structure as the primary lobule, consisting of alveolar ducts, atria, air sacs and air cells. It is pointed out that the pulmonary arteries occupy the center of the primary lobules, while the veins are found at the periphery. The lymphatics accompany the bronchi, pulmonary arteries and veins. H. E. Jordan and J. B. Banks (*Am. Jour. Anat.*, xxii) present a study of the intercalated discs of the heart of the beef. During the beginning of the third month of development the fusiform cardiac elements fuse extensively and intercalated discs arise as delicate peripheral bands at telophragma levels. They become modified later into terraced and irregular forms through the operation of mechanical factors. E. A. Baumgartner (*Jour. Morph.*, xxviii) reports on an extended comparative embryological and histological study of the hypophysis of four orders of reptiles, turtles, lizards, snakes and alligators. It was found that the epithelial portion of the hypophysis develops as a single anlage. In the evagination of the hypophysis, Rathke's pouch appears first, then the two lateral buds, and finally the anterior bud.

W. H. P. Addison (*Jour. Comp. Neurol.*, xxviii) reports on a study of the hypophysis of the albino rat after castration, noting that there is a progressive alteration in the ventral glandular portion, including changes in glandular cells, increase in colloid production, and increase in the size of blood channels. Evidence is offered of the existence of two kinds of glandular cells in this part of the hypophysis. W. E. Camp (*Jour. Morph.*, xxviii) offers a study of the development and structure of the suprapericardial body in Acanthias. The gland appears on the left side in embryos about 20 mm. in length as an outpouching of the ventral pharyngeal wall. During development this outpouching becomes disconnected from the epithelial wall, and secondary vesicles and tubules develop. By means of a small duct secondary connection is made with the pharynx, a part of the secretion passing to the pharynx, a part to lymphatic vessels. F. C. Mann and Della Drips (*Jour. Zoöl.*, xxiii) have studied in spermophiles the spleen during hibernation. The spleens of 30 hibernating animals, the period of hibernation varying from 12 hours to 175 days, and 30 active animals were studied. Soon after hibernation begins the spleen becomes intensely congested, serving perhaps as a storehouse for the red blood cells, allowing them to be added to the circulation as needed. A. E. Livingston (*Am. Jour. Physiol.*, xl) records observations on the effects of castration and spaying on the weight of the pituitary gland and other glands of internal secretion in the rabbit, finding that the removal of the sex glands has no constant effect on the growth of the pituitary, thyroids and adrenals. A. T. Rasmussen (*Am. Jour. Anat.*, xxii), in a study of the seasonal changes of the interstitial cells of the testis in the woodchuck, notes that if several species of animals are considered, there is great irregularity in parallelism between interstitial cell changes and changes in sexual activity.

Blood and Lymph Vascular Systems.—Florence R. Sabin (*Carnegie Inst. Contr. to Embryol.* No. 18) has described *in extenso* the primitive vessels of chick and pig embryos as seen after injection of living embryos. The special problem of investigation concerns the relative extent of the period of angioblast formation from the mesenchyme. It was found possible to study the angioblasts in living chick embryos of six somites and to determine that angioblasts increase in number by cell division and by differentiation of new angioblasts *in situ*, in the extra-embryonic area as also in the embryo itself. The study contains a more complete account of the primitive vessels of the head than any before given. The same author (*Anat. Rec.*, xiii) gives observations on the differentiation of angioblasts and methods in which they produce blood vessels, blood plasma and red blood cells, based on a study of the living chick. Angioblasts differentiate from a new type of mesenchymal cells, forming syncytial masses, the central part liquefying to form blood plasma, the periphery remaining as endothelium. Red blood cells develop from angioblasts and endothelium. F. P. Reagan (*Am. Jour. Anat.*, xxi), as a result of experimental studies on the origin of vascular endothelium and erythrocytes, reaches the conclusion that endothelium can be transformed into red blood cells, that mesenchymal cells in many regions of the body can develop into endothelium, and that prevascular tissue may arise from more than one germ layer. Reagan, Macmorland and Mudd (*Anat. Rec.*, xii) have investigated chemically treated fish embryos, which had developed without the formation of a circulatory system, with reference to the region of blood cell formation, and reached the conclusion that the intermediate cell mass and the posterior and ventral yolk surfaces are not the only locations in the teleost embryos which are capable of giving rise to red blood cells. E. R. and Eleanor L. Clark (*Am. Jour. Anat.*, xxi) have studied the reaction of lymphatic endothelium and leucocytes toward injected fat, finding that lymphatic endothelium in the tail of frog larvae react positively toward injected fat, and that leucocytes respond quickly to injected fat, while mesenchymal cells and blood vessel endothelium are unaffected. V. Danshakoff (*ibid.*) reports on the respiratory capillary net in the allantois of the chick, finding that capillaries pierce the outer ectodermal layer and come to lie between it and the shell membrane. I. E. Wallin (*ibid.*, xxii) describes primitive thymus-like placodes found in epipharyngeal ridges of lamprey larvae, which gradually undergo involution in older larvae and disappear during metamorphosis. H. E. Jordan (*Carnegie Inst. Publ.* No. 251) considers red blood-cell development in mongoose embryos with special reference to the activity of the endothelium, stating that observations justify the conclusion that young undifferentiated endothelial cells and mesothelial cells may anywhere in the embryo normally produce hematoblasts. G. K. Hashiba (*Anat. Rec.*, xii) reports on a study of the lymph nodes and vessels of the guinea pig, injected with Prussian blue and India ink, followed by careful dissection of formalin-fixed material. H. A. Clattenburg (*ibid.*) presents a study of the thoracic duct of the guinea pig, based on injected material, recording that in the guinea pig the thoracic duct is normally double, lying right and left of the thoracic aorta. The right duct passes behind the aorta at the level of the fifth rib and joins the left duct before terminating. A. J. Meyer (*Am. Jour. Anat.*, xxi) presents two contributions in a series of studies on hemal nodes. The evidence obtained justifies the conclusion that the development of the subcutaneous hemal nodes in bovines begins as a differentiation in the mesenchyme, and is at first syncytial, the peripheral sinus developing *in loco* independent of a blood plexus; neighboring capillaries may come in relation with the peripheral sinus.

Organs of Special Senses and Nervous System.—G. L. Streeter (*ibid.*, xxii) has investigated the factors involved in the excavation of the cavities in the cartilaginous capsule of the developing human ear, and notes that during the entire period of growth the margins of the cartilaginous cavities undergo continual transformation, the margins always receding or advancing, thus providing for the enlarging membranous labyrinth. The cartilaginous tissue which is being removed returns through a precartilage stage to mesenchymal syncytium. Streeter also (*ibid.*) reports on a study of the perioticular cisterna and scala of the human embryo, recording that the vestibular cisterna is first evident near the stapes in embryos of about 35 mm. The beginning of the scala tympani is recognized near the cochlear fenestra in a fœtus of 43 mm., and the scala vestibuli in a fœtus of 50 mm. In fœtuses of about 130 mm. the two scalae reach the top of the cochlear duct and a free opening develops between them. F. P. Reagan (*Jour. Exp. Zoöl.*, xxiii) reports on endeavors to determine the *rôle* of the auditory sensory epithelium in the formation of the stapedial plate, by removing the otocyst in chick embryos before condensation of the surrounding mesenchyme was noted, recording that the stapedial plate does not develop in the absence of the auditory sensory epithelium. Cassy A. Wood has published (*Lakeside Press*, 1917) an extensive study in comparative anatomy and physiology of the fundus oculi of birds, especially as viewed with the ophthalmoscope. H. Laurens and J. W. Williams (*Jour. Exp. Zoöl.*, xxiii) have tested the independence of central nervous-system control of photomechanical changes in the retina, by making tests on the eyes of ambystoma which had been transplanted early in development and had not regained connection with the central nervous system, finding that pigment migration and cone contraction take place in transplanted eyes of ambystoma larvae as well as in normal eyes. S. Johnson (*Jour. Comp. Neurol.*, xxviii) presents a study of the development of the sense organs of the lateral canal system in selachians, noting that there are two sets of nerve end organs, known as canal organs and surface pit organs, genetically equivalent, the latter being less developed. Nerve fibres from the nervus lateralis terminate in these nerve end organs. G. Carl Huber and A. H. Eggerth (*Anat. Rec.*, xiii) present a study of the morphogenesis of the taste-bud area in the rabbit, recording that this area may be located in the tongue of a rabbit embryo of the eighteenth day; the epithelial folds which develop were found to be histosystems. John Warren (*Jour. Comp. Neurol.*, xxviii) gives an account of the development of the pineal region in mammalian embryos. The paraphyseal, postvelar and epiphyseal arches were found to be well marked in all of the mammalian embryos studied in early stages of development. Sheep embryos present a distinct paraphysis; this is found in rudimentary form in 25 per cent. of human embryos investigated. Postvelar diverticuli are noted in human embryos. L. H. Weed (*Anat. Rec.*, xii) presents a critical review of the literature, interpreted in the light of personal observations, on the cerebrospinal fluid, its origin and mode of escape. It is thought to be the function of the cells of the choroid plexus to secrete this fluid. Its escape into the subarachnoid space is through the roof of the fourth ventricle. The cerebrospinal fluid was found to be absorbed directly into the venous sinuses by way of the arachnoid villi. Elizabeth H. Dunn (*Jour. Comp. Neurol.*, xxix) reports on attempts to transplant cerebral cortex in the albino rat. By use of immature brain tissue, held in place by small blood clots, the life of the constituent neurons was maintained in the transplant. The neurons of the transplanted cortex differ from normal neurons. D. Hooker (*ibid.*, xxvii) presents observations made on frog embryos of 2.5 to 3.5 mm. length in which a segment of the spinal cord 1 mm. long was removed and implanted in reversed position. Complete healing with return of normal function resulted in a number of cases, the implanted segment retaining its original polarity. D. H. Dolley (*ibid.*) records the possibility of determining the functional size changes in nerve-cell bodies by use of the polar planimeter, finding that the planimeter or area method applied to the stages of function affords results which are identical with those obtained with the diametral method of measurement, both in size and nuclear-plasma relations. M. J. Greenman (*ibid.*) records a study on the number, size and axis sheath of large myelinated fibers in the peroneal nerve of the inbred albino rat, under normal conditions, in disease and after stimulation, finding that neither disease nor electrical stimulation have measurable effects upon the sectional area of nerve fibres. F. L. Landacre (*ibid.*) contributes a study of the cerebral ganglia and the early stages of the development of the cranial nerves of the shark *Squalus acanthias*, based largely on observations made on an embryo of 22 mm. Eighteen separate ganglia are noted; of these the ganglion profundus, Gasserian, lateralis VII dorsalis and acustic are isolated, while the others are in contact and sometimes fused with other ganglia. Elizabeth C. Crosby (*ibid.*) contributes a study of the forebrain of the *Alligator mississippiensis*, finding that this forebrain is largely under the dominance of the olfactory system, its differentiation into basal and cortical centers being due directly or indirectly to the entrance of non-olfactory diencephalic impulses. Carolin M. Holt (*ibid.*) presents studies on the olfactory bulb of the albino rat, showing that it is possible to modify the olfactory bulbs by changing the conditions under which the animal lives and to modify them more than the brain; on microscopic examination it was determined that olfactory-bulb size is correlated with cell size and not with cell number. C. Brookover (*Jour. Comp. Neurol.*, xxviii) presents observations on the distribution of the nervous terminalis in an infant. The pyridin silver method was used in this study. The ganglion terminali contain about 300 nerve cells, connected through the cribriform plate with an enteric-like plexus in the olfactory mucosa. R. E. McCotter (*Anat. Rec.*, xiii) reports on a study of the vomero-nasal apparatus in turtles and frogs. The observations are based on serial sections and reconstructions. In the turtle this apparatus equals in size the olfactory mechanism, while in the frog it performs a secondary *rôle* in olfaction. H. H. Donaldson (*Jour. Comp. Neurol.*, xxvii) gives the results of a redetermination of the percentage of water in the brain and in the spinal cord of the albino rat, and presents evidence showing that both the relative and absolute weight of the brain and the absolute weight of the spinal cord, at a given age, are factors tending to modify the percentages of water present. S. Hatai (*ibid.*, xxviii) presents a study of the non-protein nitrogen in the central nervous system of the albino rat, recording that during growth of the nervous system the non-protein nitrogen diminishes very rapidly during the first 15 days after birth and very slowly during the subsequent period. S. H. Gage (*ibid.*, xxvii) notes that glycogen is found in the nervous system of all vertebrates, including man, if the examination is made at a selected period in development, namely, when the nervous system is coming into function. This period for amphibia is relatively early, for the chick, relatively late in development.

PHYSIOLOGY AND PHARMACOLOGY

S. J. Meltzer

The Localization of Conducting Afferent Fibres in the Cord.—Some years ago Head showed that cutaneous sensations fall into two groups—the "protopathic" (pain, temperature) and the "epicritic" (light, touch), which must be conducted by two kinds of afferent nerve fibres in the cord. In a histological study Ranson has shown that there are two kinds of afferent nerve fibres, medullated and the non-medullated. According to Ranson, a remarkable parallel exists between Head's account of the protopathic fibres and the facts which have been ascertained in regard to the non-medullated fibres. Ranson formulated the theory that the non-medullated afferent fibres serve as a part of the mechanism for conveyance of pain, temperature sensation, vasomotor reflexes, etc., and suggested that these fibres are running in the tract of Lissauer and in the substantia gelatinosa Rolandi. In the course of the foregoing study and in the year 1917 Ranson and collaborators (von Hess and Billingsley) carried out various series of experiments to verify at least a part of the theory, and have published their results in five articles (*Am. Jour. Physiol.*, xxxvii, 128; xli, 85; xlii, 1, 9, 16). The experiments consisted in unilateral or bilateral hemisections, and sections of the posterior funiculus, of the cord of cats. After complete recovery the investigators studied the effects of stimulation of the central ends of the sciatic and brachial nerves and of various points of the fourth ventricle upon the rise and fall of blood pressure, respiration and pain. They term with Sherrington the conductions which produce pain and affect blood pressure and respiration as "nociceptive" afferent impulses. In agreement with some previous investigators they found that stronger stimuli produce a rise of blood pressure, while weak stimuli, on the contrary, produce a fall. They found that the afferent vaso depressor impulses travel up the spinal cord in the apex of the posterior horn on both sides of the cord, but somewhat better homolaterally. According to them the cord contains many short spinal reflex arcs for vasoconstriction; the impulses are conducted through short neurons, mostly corresponding to the various sensory nerves of the cord. Besides the short spinal arcs, vaso reflexes go through the vasomotor centers which are located in the medulla, of which there are two. One is the well-known vasomotor center of Dittmar, located in the region of the facial colliculus, and another pressor center has been localized in the region of the apex of the ala cinera or the fovea inferior. Most of the pressor impulses ascend through the spinal path in the posterior horn to the vasoconstrictor center of the brain. But it is probable that a small portion of the pressor impulses pass directly through the gray matter of the afferent vasomotor centers. The depressor fibres are located in the part of the lateral funiculus and its conduction is bilateral, although somewhat better on the contralateral side. It seems that a separate vasodilator center exists in the floor of the fourth ventricle. Weak stimulation of afferent spinal nerves causes a drop in blood pressure, which is a true vasomotor reflex. True pressor reflexes are produced only by strong stimulation. The investigators do not believe that two antagonistic kinds of afferent vasomotor fibres exist. According to them, the pressor fibres have a high threshold and the depressor fibres have a low threshold for the stimuli. This is based upon the fact that it is necessary for the pressor fibres to pass through numerous neurons and meet with greater resistance, while the depressor fibres, which run in the ventral part of the lateral funiculus, have very few interruptions and meet with less resistance.

The Salivary Glands.—Several years ago Hemmeter reported experimental results indicating that the salivary glands possess a gastric hormone. According to him, after removal of all the salivary glands the gastric acidity as well as the peptic digestion are distinctly diminished, but can, however, be temporarily increased again by an intravenous injection of an extract of the salivary glands. In his experiments the stomach was isolated from the central nervous system and the effect could be transmitted only through the circulation, which would have meant that normally the salivary glands contain a hormone which stimulates gastric activity—a conclusion which would have been of considerable importance if confirmed. Loevenhart and Hooker have later denied Hemmeter's findings, but they used in their experiments merely a simple gastric fistula and their conclusions were therefore not convincing. In a recent publication of A. N. Swanson (*ibid.*, xliii, 205) experiments are communicated which seem to do away definitely with Hemmeter's contention. In these experiments the gastric secretion and digestion was studied in a "Pavlov pouch". After recovery from the operation the normal secretion was studied for a number of days. Later all the salivary glands were removed and the gastric secretion was studied again. Swanson found that in these circumstances the gastric acidity was not diminished but rather increased, which was ascribed to the absence of neutralization by the alkaline secretions from the salivary glands. It was found that peptic digestion was not altered at all.

Pharmacology.—In earlier studies (*A. Y. B.*, 1916, p. 681) Lamson found that intravenous injection of adrenalin causes an increase in the number of red blood cells, and came to the conclusion that the liver is the organ in which the processes take place by which the number of erythrocytes is suddenly increased in acute adrenalin polycythemia. In a recent publication (*Jour. Pharmacol.*, xliii, 129) Lamson reports a new study of that subject. Ligation of the hepatic artery prevents the adrenalin polycythemia, which, however, appears when the ligature is removed after a half-hour. The removal of numerous organs connected with the portal vein does not produce adrenalin polycythemia. Injection of adrenalin into the portal vein itself has a positive effect. After removal of the liver after establishing an Eck fistula, injection of adrenalin causes no polycythemia. These experiments offer further evidence that the liver is the organ in which the processes of adrenalin polycythemia take place. When the adrenalin has to pass through various organs before it reaches the liver it becomes destroyed in the tissues of these organs and has therefore no effect.—It is well known that most of the compounds of iodine are excreted in the urine as iodides, which circulate in the blood and in the tissues mainly in this form. Sollmann (*ibid.*, ix, 269) studied the fate of iodine, iodide and iodates in the body. His experiments led him to the conclusions that in the blood, after the administration of free iodine, the substance is bound by protein and not by the alkali of the blood and tissues, and that free iodine cannot be liberated in the body, since all the conceivable reactions for the liberation of iodine from its compounds require much higher hydrogen-ion concentration than exists anywhere in the body.—For several years Loevenhart with various collaborators studied the oxidative effects of the sodium salts of o-iodoso- and o-iodoxy-benzoic acids. In a recent publication Amberg, Loevenhart and McClure reported results of their studies of the influence of oxygen upon inflammatory reactions (*ibid.*, x, 209). Their experiments led them to the conclusion that the intravenous injection of the sodium salts of o-iodoso- and o-iodoxy-benzoic acids and of other substances containing chemically active oxygen are capable of inhibiting inflammatory reactions produced by mustard oil instilled in the conjunctiva of the rabbit or when introduced into the skin.

PATHOLOGY AND BACTERIOLOGY

Martha Wollstein

Gas Bacillus (B. welchii).—By far the most important event in the realm of pathology and bacteriology during the year is the discovery by Bull and Pritchett (*Jour. Am. Med. Assoc.*, lxvii, 1815; *Jour. Exp. Med.*, xxvi, 119, 603) that *B. welchii* makes an exotoxin for which they were able to produce an antitoxin. Further, since the action of the antitoxin is both preventative and curative, its use in gas-bacillus infections among the wounded will do away with one of the most fatal and destructive complications in war surgery. Bull and Pritchett found that broth cultures of gas bacilli are toxic and that they cause death by their destructive action on the red blood cells, although the bacilli themselves rarely enter the blood stream. The toxic action of the culture fluid is not much lowered by filtering through a Berkfeld candle. Heating to 62° C. decreases the toxicity and exposure, to 70° C. for 30 minutes destroys it. Injection of the toxic filtrate into rabbits and pigeons makes these animals actively immune against the filtrate and against live bacilli. The blood of immune rabbits was able to neutralize the toxin *in vivo* and *in vitro*, in multiple proportions, and the antitoxin neutralized the locally injurious effect as well as the hemolytic toxic constituents of the toxin. Moreover, it not only cured gas-bacillus infections, but also prevented their occurrence by making the inoculated animals (guinea pigs) immune for a period of 12 days. Bull expresses the hope that the prophylactic use of this antitoxin in man will prevent infections with *B. welchii* and that developed cases of the infection may be controlled by its therapeutic use.

Poliomyelitis.—Noguchi and Kudo (*Jour. Exp. Med.*, xxvi, 49) have settled the often discussed question as to whether flies and mosquitoes carry the virus of poliomyelitis. Their experiments gave clear-cut, negative results. Neither mosquitoes nor flies raised in the laboratory on poliomyelitis virus carried the infective agent to normal monkeys, either when the insects were allowed to bite the monkeys or when the flies were emulsified and injected intracerebrally into the monkeys. These results add strength to the experimentally proven fact that in the epidemiology of poliomyelitis only the human case and the human carrier transmit the disease.

Amoss and Taylor (*ibid.*, xxv, 507) discovered that the secretions of the normal nose and pharynx have the power to inactivate or neutralize the virus of poliomyelitis. This neutralizing power is diminished or absent in cases of inflammation of the upper air passages. The authors suggest that the presence or absence of this protective material in the nasopharyngeal secretions may determine the production of healthy carriers of the poliomyelitis virus.

Pneumonia.—The exact mechanism by which pneumococcus causes its harmful effects in the animal economy has not yet been elucidated, but the bacterium is not known to secrete a soluble toxin. Dochez and Avery (*ibid.*, xxvi, 477) have made a real advance by demonstrating that in the early stages of its growth, before bacterial disintegration has begun, pneumococcus produces a soluble substance which diffuses through the culture medium *in vitro* and enters the circulation of infected animals to be excreted through the kidneys. This substance is due to extrusion of bacterial substance during the life processes of the bacteria, and it possesses a degree of toxicity which might account for the signs of intoxication which are present in the course of lobar pneumonia. Further studies on this subject are in progress. In the blood of pneumonia patients the soluble substance gives a specific precipitin reaction with antipneumococcus serum of the homologous type. In the urine the soluble substance may appear within 12 hours after the chill, or it may be delayed in appearance and may be excreted for days after recovery. The severity of the infection is measurable by the amount of precipitable substance excreted in the urine, and the presence of a large amount is an unfavorable prognostic sign. Finally, the specific precipitin test in the urine may be used to make a rapid diagnosis of the type of pneumococcus causing the patient's pneumonia.

Stillman (*ibid.*, 513) has added to our knowledge of the epidemiology of lobar pneumonia the results of a painstaking bacteriological study of the sputum of a large number of pneumonia patients and of persons in contact with such patients, while additional evidence is furnished by examination of dust in their homes. The existence of pneumococcus carriers was confirmed, and from the dust pneumococci of the same type as those present in the patient's sputum were recovered. The author also found that occasionally a carrier of type I and type II pneumococci is encountered in whom it is impossible to trace any contact with a similarly infected patient.

Blake (*ibid.*, 67) recommends the use of the precipitin reaction between the soluble substance (see *supra*) present in the peritoneal fluid of mice inoculated with pneumonia sputum and the immune body in antipneumococcus immune serum, as the quickest way to differentiate types of pneumococci.

Colds.—Foster (*Jour. Inf. Dis.*, xxi, 451) continued his studies on the etiology of common colds by filtering the nasal secretion of patients and inoculating the sterile filtrate into the noses of healthy men. Seven of the ten men experimented upon reacted positively. The symptoms lasted three to six days.

In Noguchi's special medium an anærobic, very minute organism was cultivated from the filtrate of the nasal secretion of patients. This organism proved to be filtrable, and its filtrate was also inoculated into the noses of healthy subjects. The reactions were positive, as with the filtrate of the nasal secretion itself. The author concludes that this minute microörganism bears a definite relation to the true infective agent of common colds.

Weil's Disease.—Ido, Hoki, Ito and Wani (*Jour. Exp. Med.*, xxvi, 341) have continued their studies on Weil's disease (*A. Y. B.*, 1916, p. 690). They examined rats and found that 37 per cent. of the animals autopsied carried the *Spirochæta icterohæmorrhagica* in their kidneys or urine. These rats infect the soil, especially if it be wet and alkaline in character. Human beings are then infected from the soil. Thus, the prevalence of Weil's disease among coal miners and farmers is explained, and also the infection of soldiers in the European trenches. The importance of the extermination of rats and field mice as a prophylactic measure becomes apparent.

Noguchi (*ibid.*, 755) made the important discovery that wild rats caught in and around New York City harbor *Spirochæta icterohæmorrhagica* in their kidneys. The organism corresponds in morphology and pathogenicity with the Japanese strain discovered by Inada (*A. Y. B.*, 1916, p. 690). Noguchi also obtained a strain of this spirochæte isolated in Belgium, and concludes from cultural and immunity experiments that the American, the Japanese and the European strains are probably identical. He found that *Spirochæta icterohæmorrhagica* has special features and that it is a new genus for which he suggests the name *leptospira*.

Further proof that this organism is carried by rats in this country is brought by Jobling and Eggstein (*Jour. Am. Med. Assoc.*, lxix, 1787), who found *Spirochæta icterohæmorrhagica* in the kidneys of 10 per cent of wild rats caught and examined in Nashville, Tenn.

Typhus Fever.—Denzer and Olitsky (*Jour. Inf. Dis.*, xx, 99) bring further evidence of the etiologic relationship of *B. typhi exanthematici* to typhus fever, by demonstrating specific immune bodies to the bacilli in the blood serum of typhus-fever patients in the past-critical stage of the disease. The authors used Dale's method of anaphylactic response of the uterine muscle of the guinea-pig to the specific antigen. Neither normal serum nor that obtained from patients suffering from infections other than typhus fever gave a positive reaction.

Olitsky (*ibid.*, 349) also made experiments which proved that the virus of typhus fever is non-filtrable.

Baehr (*ibid.*, xxi, 132) found antibodies to *B. typhi exanthematici* in the blood of 20 persons, all of whom had recently been in contact with typhus-fever patients. On the other hand, the serum of 250 non-typhus controls who had not been in contact with typhus patients contained no specific antibodies. The author reasons that the contacts must have been infected with typhus bacilli in doses too small to cause a clinical attack of typhus fever. Epidemiologically such persons are a danger because they may carry infected lice and distribute them to others. These results again bring proof that *B. typhi exanthematici* is the specific etiological factor in typhus fever.

Rat Bite Fever.—Further studies on five cases of rat-bite fever have convinced Futaki, Tukaki, Taniguchi and Osumi (*Jour. Exp. Med.*, xxv, 33) that *Spirochæta morsus muris* n. sp., is the cause of this disease. They had previously found this organism in two cases (*A. Y. B.*, 1916, p. 691). In the newer studies the spirochæte was found in the circulating blood of two patients, and in small numbers in the local lesion and in the enlarged lymph glands of all five. It disappeared on recovery and reappeared during a relapse. Three per cent. of house rats were found to carry the organism, which the authors were able to cultivate and classify as belonging to the spironemacea of the nature of trepanema.

Ido, Ito, Wani and Okuda (*ibid.*, xxvi, 377) examined the blood serum of patients convalescent from rat-bite fever and found that it contains specific antibodies for the spirochæte described by Futaki and his associates. The etiology of rat-bite fever is thus definitely established as due to this spirochæte.

Relapsing Fever.—*Spirochæta obermeieri* has been grown by Noguchi from the blood of infected mice but not from human beings. Plotz (*ibid.*, 37), while in Servia in the winter of 1915, succeeded in obtaining *Spirochæta obermeieri* in pure culture from the blood of five patients. He used the anærobic ascitic fluid method of Noguchi.

Immunity.—The exhaustive studies of F. G. Novy, DeKruif and F. O. Novy on anaphylatoxin and anaphylaxis have led them to conclusions which are very different from the views hitherto accepted. Briefly stated, they find evidence in their experiments to show that anaphylaxis is due to a disturbance in the colloidal state of the plasma caused by the presence of an alien substance. This may be a pathogenic or a non-pathogenic organism or an organic or inorganic non-cellular substance. The anaphylatoxin formed in consequence of this disturbance is poisonous and causes the phenomena of anaphylaxis. But it is the serum and not the invading organism which gives rise to the poison. While it has been accepted that bacteria invading the animal body are broken up under enzyme action and toxic products liberated, Novy is emphatic in stating that no such thing occurs, but that the whole bacterial cells or their fragments induce the plasma change, and the view that endotoxins are liberated is erroneous. Thus the whole question of infection and immunity must be revised if Novy's theory is confirmed.

MEDICINE

ALEXANDER LAMBERT and HARLOW BROOKS

Military Medicine.—As indicated in previous issues of the YEAR BOOK, the dominance of war problems in all avenues of life has markedly affected, if not the progress, at least the direction of research in medicine. Now that the United States has entered the contest, this influence is paramount in American medicine, as it has been in the other great warring nations for the past two years. Practically all American institutions of medical instruction have added military medicine to their curricula and many have made it a major subject, some providing, as has the College of Physicians and Surgeons of New York, a large military hospital for the instruction of officers and enlisted men and designed also for the reception of military patients in time of need. Army medical schools for the training of officers and enlisted men have been established at Fort Benjamin Harrison, Fort Oglethorpe and elsewhere. Special depots for instruction have also been established at various research institutions, notably at the Rockefeller Institute for Medical Research in New York, where Dr. Alexis Carrel, whose services have been returned by the French Government, and a corps of equally famous scientists are engaged in teaching the newer methods evolved in Europe and in preparing medical and sanitary officers for special work and researches which they are presently to undertake in the military hospitals, here and abroad.

As a natural result of the mustering into military service of so many scientists and medical practitioners, most of whom had previously maintained an active relation to civil hospitals and medical colleges, a great dearth of teachers, clinicians and investigators now exists in the civil institutions. These institutions, together with the civil population, must suffer not only for the present, but also, because of the lowered output of men from the colleges and laboratories, for a considerable time hereafter. A further actual loss must be recorded in the death of such men of eminence as Theodore Janeway and Richard Weil, both Majors in the Reserve Corps of the army, and both of whom died as a result of overwork and pneumonia, contracted in the military camps.

The size, scope and equipment of the new army base hospitals far exceed anything of the sort heretofore projected, and in each change advantage has been taken of all the experience gained abroad as to the needs of the modern military hospital. A great advance in military medicine has been made in the assignment of specialists to the various military hospitals and Red Cross units, so that sick or disabled soldiers may have the benefit of the best special skill which the country affords. A further extension of this idea has been the assignment of specialists for the examination of recruits. This is strikingly beneficial in the detection and elimination of mental defects. Competent psychiatrists are able to exclude from the army many cases of mental disease not likely to be apparent in early stages to the ordinary physician unskilled in this branch of medicine.

Particularly careful medical examination of candidates for the aeronautic service is being insisted upon. In addition to the usual tests for physical wellbeing, particular stress is being laid upon perfect eyesight, and not only the usual visual tests but very accurate determination of defects in color perception are practiced. The sense and control of equilibrium is especially and repeatedly investigated, and very complicated and prolonged tests designed to detect minor defects in this sense have been devised. The nervous reflexes also are minutely considered. In France candidates revealing even the slightest nervous instability are rejected, and disorders of the neurovascular system, unimportant in ordinary military service, are cause for rejection in this highly-specialized arm.

Typhoid and Paratyphoid Fevers.—The experience of the U. S. Army during the mobilization on the Mexican border (*A. Y. B.*, 1916, p. 694) as well as experience abroad has amply vindicated optimism as to the very great degree of immunity against typhoid fever conferred by typhoid vaccination. Recent experiments seem to indicate that a similar immunity against paratyphoid fever may be secured by a similar form of vaccination. This is now practiced as a routine in the admission of recruits to the army, who now receive without serious inconvenience both typhoid and paratyphoid vaccine at the same time, together with the customary vaccination against smallpox. Less extensively the Schick test (*A. Y. B.*, 1914, p. 691; 1916, p. 708) also is being applied for the detection of those persons likely to contract diphtheria or to become diphtheria carriers.

Military experience here and abroad, especially among the English troops, has shown paratyphoid to be often a serious military and sanitary factor. In general it closely resembles typhoid fever in practically all respects except that the mortality is far less and complications less frequent and severe. It is caused by a group of organisms closely allied biologically to the typhoid bacillus. It is disseminated in the same manner as typhoid and under the same conditions. Two types of paratyphoid bacilli, *alpha* and *beta*, have been identified positively thus far, although an English military surgeon claims to have identified five types, differing, however, in but minor biological peculiarities. The U. S. Army now vaccinates all overseas troops against *alpha* and *beta* infections, and the vaccine used for the immunization of recruits is of the same type.

Tetanus.—Military surgeons report almost unanimously that prophylactic vaccination against tetanus has met with very marked success on the battlefields of Europe (*A. Y. B.*, 1915, p. 699). While a great question still exists as to the efficacy of treatment after the disease has developed, there can be no longer question as to the fact that the prompt immunization of wounded men before the infection has developed, even though after inoculation, meets with splendid success.

Tuberculosis. — Considerable disagreement exists as to the effects of military service on tuberculosis, some asserting that it greatly increases the spread of the disease, while others appear to hold a contrary opinion. That the disease spreads with rapidity much greater than usual among a civil population deprived of many of their customary comforts and necessities as a result of the war and its privations, particularly among the population of the devastated portions of France, Poland and Belgium, is beyond question, and a tendency of the disease to spread or recur among the wounded or those otherwise diseased in the fighting units is of course to be expected. Various commissions have been appointed both at home and abroad for the special study of the conditions favoring this spread. Perhaps the most efficient preventive method, however, so far as the United States is concerned, lies in the careful examination of recruits for the army and the exclusion of those shown to be diseased. For this purpose, when necessary, free resort to the use of the fluoroscope and the X-ray plate is being insisted upon.

War Nephritis.—In addition to the frequent conditions resulting directly from modern methods of warfare, many secondary conditions of medical importance and interest are being considered and recognized. Among strictly medical conditions war nephritis has received special consideration. This disease has appeared as an epidemic among the French and British troops and is said to have also become a serious factor among the armies of the Central Powers as well. Rudolph of the Canadian Hospital Service in France reports findings which are substantiated by Giroux and Quirin in the *Bulletins et mémoires de la Société medicale des hôpitaux* (Paris, 1916). In Rudolph's original article in the *Journal of the Canadian Medical Association* (April, 1917) mention is made of the fact that this condition was prevalent and recognized among the soldiers in the American Civil War. In general the condition corresponds clinically with the picture of ordinary nephritis, though it usually runs a much more favorable course both as to immediate symptoms and as to prognosis, for a very high percentage of the cases terminate in complete recovery. Another type, however, is more florid in its signs and symptoms and corresponds more with ordinary instances of acute nephritis. This type is associated with a tendency toward hepatitis as a complication. Although the view of some of those most familiar with the condition seems to be that it is due to an infection, perhaps to an ultra-microscopic organism, most are of the opinion that military conditions of diet, exercise, exposure, etc., are important contributory, if not the sole, factors.

Sterilization of Water.—Many of the diseases most serious in military operations are conveyed by water, among them typhoid fever, paratyphoid, dysentery, cholera Asiatica and others equally menacing, and one of the most insistent problems in active military operations is the provision of a water supply which is safe and sufficiently well flavored to permit of use for drinking purposes. Sterilization by distillation, heating or filtration is both awkward and expensive. Sterilization by chemical means demands that the chemical used shall be capable of killing the lower forms of life, notably the pathogenic bacteria, and yet be harmless to men and stock when taken in considerable quantities. Hitherto the only chemical method of much practicability has been the employment of chlorine compounds, but this method, besides requiring more or less fixed apparatus of a cumbersome type not applicable to such small quantities of water as are carried by the individual soldier, gives the water a more or less offensive taste, which results in a strong temptation to the soldier to employ more palatable water even though it come from questionable or dangerous sources. Dunham and Dakin, however, have succeeded in adapting a chemical substance, capable of compression into small tablets which may be carried by the individual soldier, which very efficiently sterilizes water of practically all the bacteria capable of transmitting disease through this medium in so short a period as ten minutes. The material is so inexpensive that the complete sterilization of a barrel of water may be accomplished for less than one cent, and the taste of the purified water is said to be not seriously impaired. (See also XXIII, *Sanitary Chemistry.*)

Nitrogen Poisoning in Explosives Manufacture.—A secondary result of the war has been the occurrence of various occupational diseases associated with the manufacture of explosives, and of late the professional and trade journals have been replete with studies of this character. Poisoning, the commonest of these diseases, results in greater part from the various nitrogenous compounds employed in the manufacture of explosives. Many severe or fatal cases present much the same symptoms as gassed soldiers (*A. Y. B.*, 1915, p. 699). There is a spasmodic contraction of the bronchi and the attack may resemble that in asthma. Occasionally severe abdominal cramps occur. There is the same tardy onset of the symptoms as is usual in mild chlorine poisoning, the patient going to camp perhaps in tolerable comfort and the dyspnœa, etc., developing later. There is distressing air hunger and finally a filling up of the lungs with fluid and death from this cause. Alice Hamilton records a case in which gangrene of the lungs apparently followed gassing in a factory with nitrogen fumes.

Of major importance in the United States particularly has been poisoning with trinitrotoluol. In the filling of shells with the heated and liquefied substance heavy fumes are emitted which cause the symptoms of poisoning. Poisoning may be caused also by the careless handling of the powdered material or by the inhalation of the impregnated dust in sweeping out workrooms, etc. This form of the poisoning causes through local irritation particularly distressing lung signs. The first symptoms are those due to local irritation, lacrimation, nasal irritation, etc. Patients complain of a bitter taste in the mouth, of spasmodic griping pains in the abdomen, of acid eructations and vomiting. Constipation is followed by tenesmus and diarrhœa. Skin irritation, most prominent in the sweating areas, is shown. The toxic symptoms further comprise nausea, vomiting, anorexia, jaundice, mental depression, blurred vision and transient peripheral neuritis. The poisoning often terminates in delirium, sometimes with coma or with convulsions. It seems that in regard to susceptibility to "T. N. T." poisoning most persons fall into one or other of two distinct classes, the first and by far the larger of which appear to be immune. The second may develop symptoms of poisoning very early, between the fifth and fifteenth week of their employment or even sooner. There is a urinary test for the poisoning which seems to be very accurate.

Martland, who made a careful pathologic study of the condition (*Jour. Am. Med. Assoc.*, lxviii, 835), states that for the susceptible the symptoms may appear very early after exposure. He appears to consider the toxic symptoms as mostly due to hepatic degeneration. *Post mortem* he reports finding extensive toxic hepatitis with destruction of the liver parenchyma and a toxic nephritis of somewhat similar type, cloudy swelling of the heart muscle, increased blood destruction in the spleen, and secondary anæmia with intense jaundice. Martland has made an especially elaborate study of the hepatic changes. One of his cases showed a very marked anæmia with associated hemorrhages from the mucosae. In this case an active aplastic anæmia was found *post mortem*, and it is notable that in this case icterus was not present but the characteristic parenchymatous changes were present in the liver, kidneys, etc. The bone marrow showed a great deficiency in red and white blood cells with little evidence of bone-marrow degeneration. Martland cites two cases in the English literature in which similar changes are reported.

Studies in Food Values.—Partly as a result of war conditions and partly as a natural development of tendencies manifest in food researches before the outbreak of the war, much work has been done of late to establish on a more certain basis a knowledge of food values and of their relative advantages and disadvantages. Myers and Rose (*Jour. Am. Med. Assoc.*, 1916) in an exhaustive study of the nutritive value of bananas conclude that bananas have a higher calorific value than any of our other common foods. When fully ripe experiments show that the carbohydrates contained in the pulp are well absorbed. Much larger quantities of sugar may be given in the form of the banana than as pure sugar without producing gastro-intestinal symptoms. The fruit has apparently about the same calorific value as the potato. A matter of considerable importance in view of the newer studies as to the food essentials is that the banana may be eaten in an uncooked state. It also appears to be a particularly valuable food addition in nephritis where blood retention of nitrogen is present. (See also XXIII, *Sanitary Chemistry.*)

The white bean has long enjoyed good repute as a large dietary component in America and is still a general and favored element of the military ration. Its food value, however, is now being questioned. Mendel and Fine (*Jour. Biol. Chem.*, x, 433) pointed out several years ago that the high content of indigestible carbohydrates is unquestionably responsible for the various types of indigestion which frequently follow the excessive use of the bean in the dietary. Notwithstanding the very high protein content of the bean, and therefore the considerable extent to which it may replace the more perishable forms of protein-rich food, such as milk, meat and eggs, McCollum, Simmons and Pitz point out, as a result of experiments on rats, that caution is necessary in attempting too far to replace these materials by the bean. They show that when the protein of the ration was derived solely from beans, there was a high mortality among rats thus fed and pronounced stunting was observable in all. The addition of small amounts of such proteins as casein of milk brings improvement, but a high proportion of beans in the dietary appears in any case to exert a deleterious effect. These investigators appear to believe that this effect is chiefly the result of the mechanical distention of the digestive tube by the indigestible portion and fermentative elements of the bean. It is asserted also that the white bean is unable to support growth because of its small content of inorganic salts. Additions are essential to make it suitable. One great advantage of the bean as an article of diet which has been disclosed as a result of these researches is its high content of water-soluble vitamine, though it is very deficient, as are the cereals in general, in the fat-soluble vitamine.

Vitamines and the Deficiency Diseases.—Hopkins (*Jour. Physiol.*, xliv, 425) showed in 1912 that certain materials are present in our natural foods the food value of which is far in excess of their calorific value, and that these as yet unisolated substances, now known as vitamines, are essential to a proper nutrition independent of calorific value. At least two such substances appear to be essential. One is soluble in fat and is present in such foods as milk, beef fat, cod-liver oil and egg yolk, but is not found in the ordinary vegetable oils or in the common cereals, except corn. The other vitamine is water-soluble and is most widely found in food where active cell structures are found, particularly in the wheat embryo. From the experiments of McCollum and Davis on rats (*Jour. Biol. Chem.*, xxiii, 231) it appears that the lack of either of these factors will bring an animal into a pathological condition, and also that the presence of a single toxic factor such as is present in the wheat embryo may cause nutritive failure. When such a vitamine substance is eliminated from the diet disease occurs. When it is added to an otherwise vitamine-free diet the disease does not appear. When it is used therapeutically the disease improves and health returns. Funk obtained from rice polishings a crystalline base which would promptly cure fowls of a disease similar to beriberi induced by feeding with polished rice. Other workers have discovered other substances unlike this in chemical composition but having the same clinical effect. (See also *Surgery, infra.*)

Vedder (*Jour. Am. Med. Assoc.*, lxvi, 1494) says that the deficiency in diet which causes beriberi is not by any means limited to rice but that it has been shown repeatedly that exclusive diets of ordinary white flour, canned goods which have been sterilized, and most carbohydrate foods will produce polyneuritis in fowls and beriberi in man. The same is probably virtually true of scurvy and it is also true at least in large part in pellagra.

Splenectomy in the Anæmias.—Based mostly on the theory that one of the most active functions of the spleen is the destruction of the red corpuscles of the blood, substantiated by numerous clinical observations in various forms of the anæmias, particularly in pernicious anæmia, splenectomy is now being employed in the treatment of many of the anæmias, in many instances doubtless with very definite benefit either with or without transfusion of blood. As a natural sequence of this practice, numerous researches have been conducted on the physiological effects of splenectomy, among such studies being notably that of C. C. Wolfert on "Blood Changes in Albino Rats Following Removal of the Spleen" (*Arch. Int. Med.*, Jan., 1917, p. 105). It seems established that a certain degree of anæmia follows removal of the spleen. This blood destruction seems to be of a hæmolytic type. Wolfert concludes that at least in so far as the albino rat is concerned, the function exercised by the spleen in the mechanism of blood destruction and regeneration is necessary to life. Apparently after removal of the spleen other tissues in the body, to a certain extent at least, assume the functions normally carried on by the spleen. From this study one must conclude that however useful splenectomy may be in some cases of anæmia, and this appears to be undoubted, improperly applied it may lead to disastrous results.

Krumbhaar, Musser and Pearce as a result of their studies conclude that the anæmia which results from splenectomy is caused by some factor, as yet unknown, operating in the absence of the spleen (*Jour. Exp. Med.*, xviii, 665). Gilbert (*Arch. Int. Med.*, Jan., 1917) reports studies on the occurrence of nuclear images in the red-blood cells following splenectomy. Apparently a close relationship exists between the loss of splenic function and the appearance of large numbers of nuclear particles in the blood. Following splenectomy there is evidence of increased bone-marrow activity. Gilbert suggests that as a result of the splenectomy a more resistant type of red cell is produced which may contribute in large part to the beneficial effects of splenectomy. Griffin (*Am. Jour. Med. Sci.*, clii, 5) advances evidence tending to show that splenectomy is particularly efficacious in the treatment of the severe anæmia associated with syphilis in which previous antisyphilitic treatment has been unsatisfactory.

Pulmonary Osteoarthropathy.—Pulmonary osteoarthropathy hypertrophic is a condition of the bones and certain joints which has been shown by numerous studies in the past to be due to chronic fibrotic and suppurative processes in the lung. The condition appears with greatest frequency in cases of bronchiectasis or chronic bronchitis with which a pulmonary fibrosis is associated. Students of the condition have often remarked on the infrequency with which it has been reported in connection with pulmonary tuberculosis, in many cases of which these etiologic conditions are frequently present. Leo Kessel (*Arch. Int. Med.*, Feb. 1917, p. 239) reports a group of 32 cases collected from a chronic tubercular survey of about 100 persons. His studies indicate that the condition is really very frequent in pulmonary tuberculosis, but that it has generally escaped the observations of specialists in pulmonary tuberculosis because of the comparative unimportance of this picture as compared to that of the etiologic infection. Kessel's conclusions are corroborated by others, among them Knopf and Fischberg, well known students of tuberculosis.

The Endocrine System and Metabolism.—Numerous clinical and experimental observations have shown that there is a very profound influence of the endocrine glands on the metabolism. Physiologists have long known that growth in the fœtus and in the infant seems to be in large measure dependent upon the combined action of the thyroid, pituitary and adrenal glands, but the importance of these glands in their relation to the metabolism of the adult in both health and disease is just beginning to receive substantiation through experimental evidence. Among the most notable contributions in this field during the year have been those of Janney (*Trans. N. Y. Acad. Med.*), who has shown that in hyperthyroidism and particularly in well marked instances of exophthalmic goitre a very marked increase in the breaking up of nitrogenous foods occurs. He has shown also that the activity of nitrogen metabolism is directly proportionate to the activity of the hyperthyroidism, and through this observation he has elaborated metabolic tests which promise to be of very definite value in the recognition of obscure instances of this condition and in their management.

Blum in 1901 showed that when a watery solution of adrenal gland was injected into dogs, it caused the appearance of a glycosuria, and clinical observations have shown that at least occasionally the use of adrenalin in the human produces a similar result, thus proving the very definite *rôle* of the secretion of this gland in the metabolism of the carbohydrates. Mackenzie (*Arch. Int. Med.*, xix, 593) reports an important series of experimental studies and reviews the literature of previous similar researches concerning the effects of the adrenal secretion on carbohydrate metabolism. Mackenzie apparently has shown that hyperadrenia causes hyperglycemia and glycosuria in part by inhibiting glycogenesis and in part by furthering glycogenolysis.

Skin Reactions.—In an increasing number of infectious diseases clinicians have resorted in diagnosis to the employment of skin vaccinations, in which a specific material, usually the killed organism of the disease in question, is inoculated into the skin or mucous membrane of the suspected patient. If the patient is suffering from the disease, positive evidence is commonly given by the presence of a marked inflammatory reaction about and in the vaccinated area. Skin tests have been applied with considerable success notably in tuberculosis, and more recently in the detection of obscure syphilis. Clinical observation, subsequently verified by laboratory experimentation, has shown that the luetin reaction for syphilis is closely simulated, if not actually duplicated, in some non-syphilitic cases when potassium iodide has been administered to the patient. Kolmer, Immerman, Matsunami and Montgomery (*Jour. Lab. and Clin. Med.*, xi, 400) present a very interesting and highly valuable study of this question, as a result of which they conclude that certain drugs, notably potassium iodide and potassium bromide, intensify or entirely simulate specific vaccination reactions not only in syphilis but also in certain forms of tuberculin and other reactions. This observation is of great practical importance in the consideration of accurate diagnosis.

Mercuric Chloride Poisoning.—The finding of a true antidote for so frequent a poisoning as that with bichloride of mercury is of great importance, both because of the great frequency of this poisoning, both accidental and intentional, but especially because of the necessary frequency with which this chemical is employed in the industries and in medical science. Wilms (*Jour. Lab. and Clin. Med.*, xi, 445) gives a summary of the work on this subject done by others and reports on a well directed series of experiments on rabbits together with human cases which tend to confirm fully the utility of calcium chloride in bichloride poisoning. Wide utilization of this antidote is certain to follow. Wilms recommends that the lime be given in doses of from two to five grains every hour (by stomach). It should be pushed until it equals at least grain for grain the amount of bichloride taken. It seems thus far to be by all means the most efficacious method for the treatment of bichloride poisoning and has the added great advantage of being of utility even when given some time after the poisoning has taken place.

Syphilis.—Among the most notable advances in the study of syphilis during the year is an extension of Warthin's original investigations concerning latent syphilis, particularly as it affects the heart muscle. Warthin (*Am. Jour. Med. Sci.*, clii, 157) now finds that in by no means an inconsiderable number of cases of diabetes, lesions of an undoubted causative type and unquestionably syphilitic are found in the pancreas. Though as yet Warthin's theories lack the crucial and final clinical confirmation, the firm foundation established pathologically leaves but little doubt as to the correctness of his theories.

An adaptation of the administration of mercury by the old-fashioned method of inunctions of mercury has been elaborated by Wile and Elliott (*Jour. Am. Med. Assoc.*, April 7, 1917, p. 1024), who by an exact but simple method demonstrate the rapid absorption of certain forms of mercury by the skin route and its utility in the treatment of this infection. They show that the mercury is absorbed by this route both by volatilization and by direct absorption through the skin. They finally suggest the more general use of inunctions of calomel, which combine the benefits of rapid and non-irritating absorption with relative cleanliness and ease of administration.

SURGERY

George David Stewart and Herman A. Haubold

Pyogenic Infections.—The local treatment of infected wounds has not undergone any material modification since the report in the Year Book for 1916 (p. 698). The so called Carrel-Dakin chlorine treatment is still largely employed and has found its proper place. It may be regarded as a useful measure to mechanically cleanse infected wounds and to inhibit bacterial flora in exudate, thus preventing reinfection. It does not, of course, destroy bacteria in living tissue, and when used in fresh wounds, it lessens the resistance of cells to bacterial invasion. Used in granulating wounds, the technic of its application should be executed without injury to the budding blood vessels with the view of obviating the creation of new ports of entrance to infection.

The entrance of large numbers of pus organisms into the blood (bacteræmia) is usually fatal. Efforts to overcome the fatal character of pyogenic infections have engaged the attention of scientists for many years. Attempts to destroy bacteria in the blood by the introduction into it of chemical agents have been, as far as pus organisms are concerned, unsuccessful, although, looking into the future, this possibility should not be ignored. Furthermore, persons who have recovered from pyogenic infections are immune against a second invasion for only a short period of time. Hence, immunization by the introduction of immune bodies derived from another person would be possible only if these were obtained either from a human just recovered from an infection or from one whose blood was rendered immune by carefully graded doses of pyogenic bacterial vaccines.

Hooker (*Ann. of Surg.*, Nov., 1917) reports five cases treated along lines of immunization. Of these, two were chronic cases of blood poisoning (staphylococcæmia), which recovered, and three were acute cases, one of which recovered. Hooker prepared a vaccine, derived from blood cultures of the infected patient, which he injected into a donor (blood relative of the patient), thus stimulating the blood-forming organs of the latter into the formation of immune bodies. When it was assumed that the blood of the donor contained sufficient immune bodies for the purpose, Hooker transfused it into the blood of the afflicted person, with the results stated.

The technic of developing immune bodies in the blood of the donor is of course preceded by a more or less prolonged period of time occupied in cultivating the bacteria responsible for the infection in the patient; in the meantime, the condition of the latter grows steadily worse. Hooker suggests that in each instance the blood of the patient be tested for resistance early in the progress of the disease, perhaps before a bacteræmia (blood poisoning) is fully developed, and at the same time the blood of a number of persons be tested for natural resistance to pus organisms. In this way donors would be immediately available for transfusion as soon as the index of the infected one fell to a point where extrinsic help was desirable. Under ordinary conditions of life this is a difficult, if not unsurmountable, problem. In war time, however, where large numbers of soldiers recovering from acute, subacute, and chronic pus infections are congregated at one center, the conditions are less unfavorable. The picture of a convalescent soldier donating immune blood to a delirious, painracked comrade is one which has been seen in more than one base hospital in Europe, where unheralded heroes calmly submit to the manipulations necessary to this end.

Cancer.—When Cohnheim (1882) and Ribbert (1884) submitted the "superfluous, misplaced or abnormally persisting centres of embryonic tissue" theory in regard to cancer, it looked as though corrective measures involved problems in heredity impracticable of solution. Experimental research seemed to show that since transplanted embryonic tissue did not develop malignant characteristics, certain collateral provocative conditions were necessary before cell proliferation was engendered and cancer developed. This is undoubtedly true, yet many of these conditions—such as injury, mechanical irritation or the occurrence and prolonged maintenance of inflammatory processes—are also unavoidable incidents common to everyday life, and, indeed, they could not actually be proved to be the exciting causative factors of cancer.

The existence of a relationship between the growth of a malignant tumor and conditions of nutrition within the host seems also to have been shown. Clinicians have frequently observed a startling discrepancy between the extent of a malignant (cancerous) growth and grave impairment of the general health of the host. A cancerous growth no larger than an English walnut situated at the port of exit of the stomach where it joins the intestine is at times attended with great emaciation and even the development of that indescribable yet characteristic appearance called "cancer cachexia", while, on the other hand, cancerous involvement of the entire abdominal contents may persist for a considerable period of time without the appearance of menacing constitutional symptoms. These aspects of the disease presented renewed field for observation when Ehrlich (1906) seemed to show that a tumor graft, when embedded in a new host, must obtain there a certain specific food stuff. When the supply of this so-called X-stuff in the organism is exhausted, due either to a deficiency of the diet necessary to furnish it or to a greater avidity of the normal body cells to consume it, the graft fails to develop.

Levin (*Proc. N. Y. Path. Soc.*) reviews the literature on the subject and adds the results of his own experimentation, as follows:

> The results of investigations do not appear to be sufficiently uniform or constant. On the other hand, recent investigations on the causation of beriberi and similar so-called deficiency diseases made very probable the existence in the food of a class of substances which C. Funk named vitamines and which are of vital importance to the animal organism.
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> Vitamines are complex, nitrogen-containing, crystalline substances, the exact chemical structure of which is not yet known. Deficiency diseases appear to be due to consumption of food which lacks vitamines. Highly polished rice presents a food completely void of vitamines, while the rice polishings contain all the vitamines of the rice. People living in the tropics and subsisting upon polished rice as the only article of food suffer from beriberi and other deficiency diseases. An introduction into the organism of a small quantity of vitamine may cure a deficiency disease. An alcoholic extract of yeast is the most easily obtainable and the most active vitamine. Pigeons and chickens fed on polished rice emaciate, ultimately refuse to eat the rice and die of starvation. They also frequently develop a polyneuritis, which is an experimentally induced disease analogous to beriberi.
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> In view of the great importance of vitamine as a life-sustaining ingredient of food which moreover acts in minute quantities, it seemed plausible *a priori* that of all the foodstuffs it should exercise the greatest influence on tumor growth, if the latter depends on the conditions of nutrition at all. The writer, therefore, undertook to investigate the relation between vitamines and tumor growth. The sarcoma of the fowl described by Rous is singularly well adapted for this line of research. The tumor is very malignant clinically, frequently forms metastases, and is readily inoculable in chickens. The latter animals, on the other hand, as stated above, are easily influenced by changes in the vitamine contents of the food.
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> The experiments were conducted in the following way: 200 chickens divided in three groups were used for the experiments. The first group of animals were inoculated with the tumor simultaneously with the beginning of the rice feeding. The second group of animals were fed with rice, and at the same time 20 c.c. of an emulsion of yeast extract in water (5 gm. of yeast extract in 20 c.c. of water) were introduced into the stomach of each chicken through a catheter every other day. . . . Four weeks after the beginning of the rice and yeast feeding the animals were inoculated with the tumor. The object of this group of experiments was to enable the tumor inoculation to take place in

animals already suffering from a deficiency of vitamine. The additional yeast feeding as conducted in this investigation does not cure the rice-fed animals completely, but prolongs their life. Instead of four weeks they could be kept alive nearly seven weeks. Nevertheless, the animals became severely emaciated, and even a greater percentage of them developed polyneuritis than of the animals fed with rice only. This is probably due to the fact that the latter did not live long enough to develop the disease. The third group of animals was used as control to the other two. They were given normal food and were inoculated with the tumor usually on the same day and from the same source as the corresponding series of animals of the first or second group.

Levin's experiments lead him to the conclusion that while he did not show a direct causative relationship between certain articles of diet and malignant tumors, he did show that this was due to the crudeness of the methods now available, and that it is "still feasible to presume *a priori* that variations in the condition of nutrition of the animal may influence the growth of a tumor." His work reopens a fascinating possibility in connection with the problem of cancer as a whole and should stimulate additional investigation along these lines. While the prevention of cancer might not be attained even though work of this sort were crowned with success, yet, when once laws were established in regard to nutrition and cancer growth, the total removal of cancer by the surgeon might well be followed by a regimen tending to obviate its recurrence.

The X-ray and Surgery of the Chest.—In a considerable number of cases pneumonitis is followed by pus collections in the cavity of the thorax. The presence of pus is usually determined by puncture of the chest wall with a hollow needle connected with a suction syringe. Many chests have been punctured without revealing the presence of pus when it was suspected, and not infrequently the needle has failed to demonstrate pus when it was present. The X-ray removes all doubt in this connection: when pus is present, the radiogram shows it. In addition to this, the radiogram renders it feasible for the surgeon to determine upon the character and extent of the operative measures of relief. This has made it possible to devise methods of procedure by which the entire diseased focus may be removed at one sitting, the lung allowed to expand, and the distressing deformity so frequently a sequel to this condition obviated. Lilienthal, at the June, 1917, meeting of the American Surgical Association, reported the results of 100 operations of this character. He says that "during the period covered (by this report), in all the cases operated upon in my service at Mt. Sinai Hospital, without the slightest attempt at selection, there has not been a single thoracoplastic collapse operation. There have been a number of revisions but eventually all the patients that recovered went home with symmetrical chests and fully expanded lungs." He depends largely upon the X-ray in making the preliminary diagnosis.

Plastic Surgery of the Face.—Esser of Holland reports (*Ann. of Surg.*, March, 1917) the results of 700 operations for plastic repair of the face performed upon soldiers disfigured by wounds. He disregarded the usual methods of taking flaps from the arm and breast, and utilized the skin from contiguous portions of the face and neck. Esser's technique is daring, since failure causes additional disfigurement, yet is brilliant in outcome when successful. The chief cosmetic advantage of the method lies in the fact that the skin of the face and neck used for repair is weather beaten, of the same coloring as was that at the site of the defect, and may be covered with hair; whilst the opposite obtains when flaps are taken from the arm or chest. Esser fashions his repair flap boldly, seeing that its pedicle (handle of attachment) contains a large nutrient artery—usually the facial or temporal. The fact that the method has merit is shown by the "before and after" pictures Esser shows of his cases.

In addition to this, the Dutch surgeon shows that many of the disfigurements are due to normal parts of the face being allowed to heal in a faulty position, and that simple removal of the scar and careful sewing of the parts into normal positions is followed by cosmetic correction. This means that in many instances had care been exercised in the primary treatment of the injury, disfigurement might have been avoided. If the unfortunate results met with in cases of this sort in civil life are at all indicative, it is easy to see how this would obtain, much multiplied, in war time. However, even at first-aid stations, much can be done to lessen disfigurement. Indeed, Moynihan (R.A.M.C., British Army) has made an earnest and fruitful effort to equip the British surgeons at the front with facilities destined to be of signal service in this connection. Part of this equipment is special instruction. Surgeons detailed to first-aid work before being ordered to duty should be given opportunity to attend clinics in the large cities contiguous to the camps of mobilization where special courses could be arranged for.

Sterility in the Male.—From the standpoint of the surgeon, sterility in the human male has in the past received but meagre attention. The cause of childless marriages has been persistently laid at the door of the female. When a childless widow subsequently bore children, the phenomenon was explained on the score of "soul accord", etc. It seems fair to state, however, that fecundation occurs when a healthy (even somewhat damaged) male element of generation meets an ovum in proper physical environment irrespective of psychic conditions accessory to the meeting. It is still true that sterility is more common in women than in men, but it is also true that recent investigations show that men are more often sterile than has heretofore been believed. At the June, 1917, meeting of the American Medical Association, Lespanasse presented a number of specimens showing the chief cause of sterility in the male, and at the same time submitted the technique of an operation, devised by himself, destined to afford relief in this condition. The operative procedure has been successful in several instances. The operation makes procreation feasible where this was previously impossible. The work as a whole accentuates the necessity of suitable examination of both the man and the woman before the cause of a childless marriage is decided upon.

PUBLIC HEALTH AND HYGIENE

ARTHUR W. HEDRI

Health Problems of the Military.—One of the conspicuous features of the mobilization and training of troops of this war has been the relatively low incidence of disease among the troops. It is stated that in some wars of the past, the death-rate from disease has been 12 times as high as from wounds; the reports from the front, however, indicate that in the present war, the death-rate from disease is even lower than that from wounds. The provision of pure water supplies has greatly reduced typhoid, paratyphoid, and cholera; the prophylactic use of vaccines in most armies has further served almost to eliminate these diseases from the military. Typhus and plague have been combated by war on the louse and the flea.

Evans pointed out in his presidential address before the American Public Health Association at Washington, D. C., that in the training camps the recruits were menaced chiefly by measles, mumps, cerebro-spinal meningitis, and the venereal diseases—gonorrhea, syphilis, and chancroid (*Am. Jour. Pub. Health*, Nov., 1917). The control of these diseases is a matter of supervising not only the camps themselves, but also the extra-cantonment zones.

As to measles, in some regiments epidemics have involved as high as 54 per cent. of the susceptibles; in others properly supervised, as low as six per cent. of the susceptibles. Evans quotes Munson as follows: "Measles is a thoroughly preventable and controllable disease. Epidemic measles should hereafter be a reproach to the commander or medical officer concerned."

Mumps, while not seriously considered by the general population, has been ranked fifth as a cause of sick days. Closer study and regulation are therefore urged.

Nicoll (*Military Surgeon*, Aug., 1917) reports as a result of experiences with the army at Ft. Bliss, Tex., that epidemic pneumonia is to be expected in large camps in winter. Serum treatment has produced excellent results in reducing mortality, and vaccination is considered even more promising.

Cerebro-spinal meningitis, says Evans, is more a disease of soldiers in barracks and camps, than of armies in the field. Crowding is the chief factor in its spread. Control of the disease is by isolation of cases and carriers, and treatment of noses and throats of the latter with chloramin-T solution.

Venereal disease is responsible for more disability than any other disease. The solution of the problem is difficult, and less headway has been made than in most of the other communicable diseases. Civil authorities are called upon to restrict prostitution in zones around cantonments; social service organizations are approaching the problem by appealing to the higher moral qualities of soldiers and sailors and by providing wholesome recreation; and medical officers in many instances give out prophylactic packages of soap, silver solution, and mercury ointment. The Surgeon-General of the Army recommends that these packages be again authorized for general issue.

It is emphasized that civil authorities must make their communities safe from the standpoint of all of the foregoing diseases.

New Health Agencies Created.—During this year, an Army Sanitary Corps was created, operating under the direction of the Surgeon-General of the Army. Commissions are issued to men trained in bacteriology, sanitation, sanitary engineering, and allied sciences. The work of this corps includes disinfection of water-supplies, installation of filtration plants, disposal of garbage, sanitation of living quarters, etc.

The American Red Cross has created a Sanitary Service Bureau, and placed in charge Assistant Surgeon-Gen. W. H. Frost, of the U. S. Public Health Service. The activities of this bureau are chiefly devoted to civilian areas surrounding cantonments, over which the military authorities exercise little or no control. Local authorities delegate powers upon the agents of the Red Cross Sanitary Service Bureau, which in turn coöperates closely with the U. S. Public Health Service. Milk supplies for the military are closely guarded; breeding places of malarial mosquitoes are cleaned up; and, in general, every effort is made to provide a healthful environment for the camps.

The National Council of Defense has a branch under the direction of Major W. F. Snow, president of the American Social Hygiene Association, devoted to improving the moral tone around camps. Investigations are made regarding the presence of prostitution, and the attention of civil authorities is called to the matter. In addition, numerous voluntary organizations work towards the same end.

A bill was introduced into Congress to create a Sanitary Reserve to the U. S. Public Health Service. The bill provided for the issuance of commissions to state and local health officers and others skilled in sanitary science, thereby placing them under the direction of the Surgeon-General of the U. S. P. H. S. The Service was to "coördinate the activities of the local bodies, and to make them effective." The bill passed the Senate, was referred to a committee in the House, altered somewhat, favorably recommended by the committee, but failed to come to a vote before adjournment of Congress, much to the disappointment of sanitarians generally.

War and the Health of the Civilian Population.—The problem which has caused perhaps the most comment, although not as yet the most serious, has been that of the food supply. The high cost of food is unquestionably leading to under-nourishment. The problem is most acute with regard to milk, which has in many places advanced 50 per cent. in cost, to the disadvantage of the babies of the poor. The adult population suffers less; and the advice of the U. S. Food Administration to use less meat, fat, sugar, and wheat flour can be followed without much danger, and doubtless to advantage in many cases.

Among the civilian population, munitions workers have been most carefully studied with a view to safeguarding against the effects of speeding up and against industrial poisons. Among the English, studies show the inadvisability of overwork. As a result, standards limit the working period to a maximum of 60 hours per week. Rest periods of 10 minutes at the middle of the morning and afternoon, and cessation of work on Sundays actually tend to greater production than continuous work.

Poisons in explosives industries have been studied extensively by Alice Hamilton and others. Among the dangerous chemicals are nitroglycerin, nitro-toluol, benzene, and fulminate of mercury. Hamilton (*Jour. A. M. A.*, Mar. 10, 1917) found 2,500 cases of poisoning in 28 factories in which reliable statistics were available. There were 53 deaths. Of the 2,500 cases, 111 had nothing worse than a fulminate rash, and there were 205 cases of mild anilin poisoning; but with the exception of these, the form of poisoning was usually fairly serious. T.N.T. (trinitrotoluol) and benzene caused the largest number of fatal cases. The preventive measures which are recommended are helmets, good ventilation, and scrupulous cleanliness.

Aftermath of the War.—Sanitarians are already planning for peace, although at this time this seems far off. One of the most serious problems to be encountered will be that of venereal disease brought back by returning soldiers. In spite of all the efforts of army medical officers, soldiers will become infected. Another problem is the increase of tuberculosis at the front.

In an editorial contributed to the *American Journal of Public Health* for October, it is urged that a system of "outgoing quarantine" be established, whereby soldiers with open cases of these diseases would be kept in detention hospitals in the country where infection was contracted, until the infectious stage had passed. It is thought to be well-nigh impossible to isolate successfully after the arrival of transports in this country on account of the impatience and curiosity of friends; but a delay at the point of embarkation would be more easily accomplished.

Evans (*loc. cit.*) points out that with the end of the war there will return to this country over a million soldiers with advanced ideas as to public hygiene. There will also come from the Medical Corps 20,000 or more trained sanitarians, available for public health work in civil life. The return of these should give the public health movement a tremendous impetus, one of the chief difficulties in the past having been the lack of trained sanitarians.

Reorganization Among State Health Departments.—One of the most notable developments during the year in the public health field has been the number of reorganizations in state health administration. Among the states in which radical changes have been made are Connecticut, Illinois, Maine, California, New Jersey, Ohio, and Minnesota.

The tendency is to adopt forms of administration similar to those of New York State and Massachusetts. In Maine, for example, the State Board of Health was abolished, and a Public Health Council of five members substituted. This body has the power to establish regulations in furtherance of existing statutes. This type of authority does not go so far as that in force in New York, where the Council has the right to frame rules which have the force of statutes, provided they do not conflict with existing statutes.

The system of district health officers is also being copied by Maine, California, and other states. It is significant that although the medical degree is still insisted upon for the position of State Health Commissioner, this requirement has been omitted for district health officerships in both the states mentioned. This action is based upon the fact now well recognized among sanitarians that the practice of public health and the practice of medicine are two entirely different things, the first being primarily a preventive activity, while the second is curative. Accordingly, we are not surprised to find in California that of six district health officers, three were non-medical men, although thoroughly trained in the science of public health.

In Connecticut, the recommendation to establish state health districts was not followed by the legislature, but instead provision was made for the voluntary consolidation of health activities in the smaller communities.

Typhus Fever.—Olitsky, Denzer, and Husk report work which tends to confirm the belief that *B. typhi exanthematici* is the cause of typhus. In the *Journal of the American Medical Association* for April 21, 1917, they report experiments in which typhus-infected lice were ground up and injected intra-peritoneally into guinea pigs. Necropsy showed the typical lesions of typhus in such animals, and emulsions from the spleen gave typical colonies of the typhus bacillus.

In the *American Journal of Public Health* for July, 1917, Hicks gives the modern hygiene of typhus. Immigrants arriving at the port of New York are first given a shower and wash with soft soap. This is followed by a kerosene wash, which kills the lice. Meanwhile, the valuables are dipped in 50 per cent. alcohol, and clothing is exposed to live steam for a period of 40 minutes. Sulphur is found to be useless for killing the lice. Whereas live steam at 15 lb. pressure for 30 minutes killed the insects through three thicknesses of woolen blanket, the lice were found alive after 18 hours' exposure, when 8 lb. of sulphur per 1,000 cubic feet had been burned.

Mark Boyd in the *American Journal of Public Health* for August, 1917, gives an interesting account of the delousing of Mexican section hands of the Santa Fe R. R. in Iowa, among whom typhus had broken out. The process was carried out in a train of bunk cars, specially adapted to the purpose. Persons were washed with soap, water, and kerosene. Clothes were disinfected by dry heat at 160° F. for 20 minutes in an oven heated with steam from an engine.

The Control of Communicable Diseases.—A most valuable guide to public health practice has been published in *Public Health Reports* for Oct. 12, 1917. This is the Report of the Committee on Standard Regulations for the Control of Communicable Diseases of the American Public Health Association. It consists essentially of a brief *résumé* of the most authoritative views regarding the transmission of communicable disease, and the preventive measures believed to be most effective. Inasmuch as many state and local health codes are based upon obsolete theories of disease prevention, this report may well be used as the basis of new legislation.

The report first defines the terms commonly employed in public health parlance, such as "cleaning," "contact," etc. A sharp distinction is drawn between *fumigation* and *disinfection*. Fumigation is defined as "the process by which the destruction of insects, as mosquitoes and body lice, and animals, as rats, is accomplished by the employment of gaseous agents." Disinfection is defined as "the destroying of the vitality of pathogenic micro-organisms by chemical means or by heat."

The limitation of fumigation to the killing of insects is a result of the view that gases are incapable of destroying the micro-organisms of disease. The only diseases in which terminal fumigation is recommended are those in which insects are possible carriers, such as malaria, dengue, etc.

Another distinction is that made between *isolation* and *quarantine*. Isolation now refers to the patient, exclusively; while quarantine relates to the exposed person.

Under "education in personal cleanliness," emphasis is laid upon hygienic cleanliness, as opposed to esthetic cleanliness. The five rules given are simply rules to prevent the distribution and reception of the infectious discharges, directly or indirectly.

Each of the communicable diseases listed in the model law for morbidity reports is treated under the following headings: (1) Infective agent; (2) source of infection; (3) mode of transmission; (4) incubation period; (5) period of communicability; (6) methods of control as related to (a) the infected individual and his environment, and (b) general measures.

The Schick Test.—This valuable test is proving its usefulness in a number of directions. Zingher points out (*Health News*, N. Y. State, April, 1917) that it is applicable to homes, schools and institutions on a large scale, for the purpose of determining immunity. Those who have passed the second year of life and show a negative reaction are protected for years, and probably for life. The data obtained by the test are useful both to the individual and the community: the individual is enabled to protect himself, if found susceptible to diphtheria, by three injections of toxin-antitoxin; the community gains by being able to select the susceptibles in a community and concentrate preventive measures upon them, and possibly to finally control the disease.

A New Immunity Hypothesis.—In the *American Journal of Diseases of Children* for March, 1917, Zingher states an exceedingly important hypothesis. His theory follows: "A susceptibility to one of the less contagious diseases indicates that the child is also more apt to be susceptible to other contagious and infectious diseases." In other words, if a child is found to develop a case of one of the less infectious diseases, such as poliomyelitis or scarlet fever, it is more likely to be susceptible also to the more easily communicable diseases such as measles and diphtheria.

This hypothesis was derived by means of the Schick test. Zingher found that whereas among normal children between the ages of two and four only about 32 per cent. were susceptible to diphtheria, as determined by the Schick test, among poliomyelitis patients about 80 per cent. were susceptible to diphtheria. Similarly, scarlet fever patients were found to be twice as susceptible to diphtheria as normal children.

Birth Control.—This subject was formally introduced before sanitarians by Dr. S. A. Knopf. (*Am. Jour. Pub. Health*, Feb, 1917.)

Knopf considers the subject from its medical, economic, moral, and social aspects. He points out his observation that in large families it is most frequently the later children who develop tuberculosis, and quotes Hamilton's figures showing the parallelism between large families and a high death rate. Sixty-five per cent. of the tuberculous mothers, he says, die as a result of pregnancy.

He sees in birth control a means of restricting the transmission of venereal disease and of lessening the propagation of epilepsy, idiocy, insanity, and alcoholic predisposition.

The economic advantage is indicated of restricting children to the number that can comfortably and decently be cared for.

Statistics are quoted from Holland to the effect that in the 50 years following the introduction of birth control the average stature increased four inches, and that favorable results had also been attained in New Zealand and Australia.

The social advantages claimed are lessened poverty and dependency, and a better racial stock, inasmuch as at present the highest birth rate is among the lower classes.

Prostitution will be reduced, he claims, when early marriages can be undertaken by those of moderate means, without the immediate burden of offspring.

Knopf's views were warmly endorsed by some sanitarians and sharply criticized by others, chiefly on the score of emotionalism and faulty deductions. The movement has, however, gained a foothold, as is evident by the publication of a periodical, *The Birth Control Review*, by the Birth Control League.

Mental Hygiene.—The National Committee for Mental Hygiene has created a sub-committee on furnishing hospital units for nervous and mental disorders encountered in connection with the war. The project is approved by Surgeon-Gen. W. C. Gorgas of the U. S. Army. Maj. Pearce Bailey, M. R. C., of New York is chairman.

Activities are connected both with registration of recruits, and with the care of soldiers at base hospitals.

The work of the psychiatrists at the recruiting stations is sure to encourage the more general adoption of such tests in civil life. In a discussion before the American Public Health Association at Washington, Bailey told of the method employed. The recruits are passed under a strong light in front of the psychiatrist. Experience enables this officer after short observation to select those who should be retained for detailed examination. There are many who in civil life would ordinarily be regarded as merely "queer," but who, under the severe conditions of military life, would constantly be in trouble. It is reported that in England many soldiers were executed for desertion and similar defections, until the introduction of mental examinations showed that in many cases the cause was mental deficiency rather than cowardice or insubordination. (See also XIV, *Social and Economic Problems.*)

The Bubbling Fountain.—Experiments by Pettibone, Bogart and Clark, published in the *Journal of Bacteriology* in Sept., 1916, showed that the bubbling drinking fountain could spread disease as had its predecessor, the common drinking cup. The authors referred to showed that an epidemic of streptococcus tonsillitis had been caused in this manner in an institution, the infecting organisms being found in over 50 per cent. of the fountains. It was further shown experimentally that organisms introduced either by the lips or with a pipette, could remain in the bubbling water of a vertical jet from 2 to 35 minutes.

H. A. Whittaker, writing in *Public Health Reports* for May 11, 1917, confirms these conclusions. Seventy-seven drinking fountains at the University of Minnesota were examined, representing 15 different types. Eighty per cent. of the bubbler surfaces were found infected with streptococci, which were doubtless of human origin. Even in the water from the fountains there were streptococci in 11 per cent. of the cases.

Three criticisms are offered: first, against the vertical jet; second, against the low jet which permits contamination of the bubbler surface with the lips; and third, against the cup around the jet, which retains the infected water.

A new bubbler is shown which has a slanting jet and a wire muzzle which prevents mouthing the nozzle. Trials covering a period of several weeks showed this type of apparatus to be safe.

Poliomyelitis.—The epidemic which was prevalent last year has to a great extent subsided. The public health activities associated with this disease have been along the lines of studies to determine its etiology, the preparation of a serum for use in treatment, and the after-care of afflicted patients.

The causative organism is believed by Flexner, Rosenow, and others to be a pleomorphic streptococcus. This when injected into monkeys gives rise to symptoms strongly resembling those occurring in the disease in man.

The mode of transmission is not yet definitely proved. The report of the Committee on Standard Regulations of the American Public Health Association published in *Public Health Reports* for Oct. 12, 1917, gives the mode of transmission as "direct contact with an infected person or with a carrier of the virus, or indirectly by contact with articles freshly soiled with the nose, throat, or bowel-discharges of such persons."

The incubation period is believed to be from three to ten days, commonly six days.

Measures of control recommended are early recognition from clinical symptoms and laboratory examinations of spinal fluid; isolation in screened rooms; quarantine of exposed persons for 14 days; and concurrent disinfection of nose, throat and bowel discharges.

After-treatment of paralytic cases meets with great success. This consists essentially of muscle training in order to establish new nerve paths to replace those destroyed by the disease. Such work is performed on a state-wide basis in Massachusetts, New York, recently in Minnesota and probably other states.

Treatment with serum taken from recovered cases seems to be giving beneficial results, according to Amoss and Chesney (*Jour. Exp. Med.*, April 1, 1917).

Education of Health Officers.—Dr. G. J. Vincent (*Jour. A. M. A.*, April 7, 1917) says that social demand and academic supply are far from an exact formula. Vincent reviews the work of universities giving public health training, and gives the important related data. In most of these schools practical field work is given. Some phases of public health work, however, seem to have been overlooked: for example, he thinks that more emphasis should be laid upon public health publicity. More emphasis will in the future be laid upon the social sciences also, he thinks.

Taking up the types of academic training in preparation for public health, he is of the opinion that two years of medical subjects followed by two years of special public health subjects provide satisfactory preparation for administrative work. There is danger, he thinks, that the physician will give too much time to unnecessary medical and surgical details. The sanitary engineer, likewise, is not best fitted for public health administration.

Alcohol and Public Health.—Haven Emerson (*A. J. P. H.*, June, 1917) urges health officers to consider alcohol a public health problem of the first importance. He considers preventable diseases under three classes: communicable diseases; diseases of occupation; and diseases due to bad personal habits. He shows that alcohol lowers resistance to the communicable diseases, increases industrial accidents and poisonings, and in other ways operates against the aims of the health officer.

He does not ask for a campaign for legislative interference with the industry, but holds that it is the duty of the profession to educate the consumer of alcohol regarding its deleterious effects. When the demand subsides, he believes the liquor industry will automatically vanish.

Relative Values in Health Publicity.—William T. Foster in *Health News* (N. Y.) for May, 1917, evaluates the various types of publicity on the sex hygiene question. Distribution of a circular after a meeting is given an arbitrary value of 1; then follow the other comparative values:

Attendance of a parent at a parents' meeting................	7.3
Attendance of a boy at a boys' meeting	8.3
Questions answered by Advisory Dept.	10.0
One call at the Advisory Dept....	17.0
Placing a State Board of Health placard	26.7

Coöperative Diagnostic Laboratories.—Dr. W. R. Stovall (*A. J. P. H.*, Sept., 1917) describes the coöperative diagnostic laboratory system as maintained in Wisconsin, and recommends extension of the scheme.

Under the central state laboratory system but few specimens are sent from remote parts of the state owing to delay and inconvenience. For diagnostic purposes in diphtheria, for example, such a laboratory is not very useful to the physicians of the state. The Wisconsin method is to establish branch laboratories in which the state pays half the expense and the coöperating cities pay the rest. Thus, more laboratories can be installed, and efficient state supervision be guaranteed over local laboratories.

Stovall urges that laboratories include in their work the tests that are to help the physicians make diagnoses; not merely the tests for control of communicable disease. Tissue work is an example.

Prevention and Cure of Acute Lobar Pneumonia.—Dr. Rufus Cole on May 2, 1917, discussed this subject before the Conference of State and Provincial Boards of Health. (See their 1917 Report, or *A. J. P. H.*, June, 1917.)

There are four types of pneumonia organisms. Types I and II cause 65 per cent. of the cases; type III about 10 per cent., and type IV about 25 per cent. The mortality among the first two groups is 25 to 35 per cent. The third group is more fatal—about 50 per cent. of the cases dying. The fourth group has a low mortality, 10 to 15 per cent.

Cole believes that the epidemiological features are much the same as in other diseases—at least in types I and II; that is, infection is fairly direct from a patient or a healthy carrier.

Preventive inoculation has not yet fully justified itself, but it seems possible that with due regard to the prevailing type of organism preventive inoculation may have limited application—not, however, to the general population.

Serum treatment in type I has high efficiency; in type II it is less useful, and in type III the use of the serum is not justified by results obtained. Type IV consists of a group of organisms not included in the other types. For these no serum is practicable.

Cole recommends the following practical measures to be instituted: first, to make lobar pneumonia re-portable; second, to isolate patients to a limited degree, sterilize sputum, etc.; third, to undertake laboratory diagnosis of types of organisms in health departments; fourth, to give serum treatment in type I cases. The earliest possible diagnosis is essential for this purpose. Cole emphasizes that administration of the serum should be under the direction of a physician from the health department, who has been especially trained for the purpose.

Standardization of serum is a step yet to be accomplished in the interest of effective serum therapy.

VITAL STATISTICS

Registration Area for Deaths.—The Bureau of the Census was unable to complete the report on mortality statistics for 1916 for publication before the end of 1917. Through the courtesy of the Bureau, however, we are able to present the main features of the bulletin in press at the end of the year.

The registration area for deaths is composed chiefly of those states in which the registration under state laws is so sufficiently complete that transcripts are obtainable by the Bureau of the Census as the basis for the annual compilation of mortality statistics; but certain cities in non-registration states are also included, the registration of deaths in these cities being conducted under local ordinances. It will be seen in the table following that the registration area for deaths now embraces nearly three-quarters (70.2 per cent.) of the total population of continental United States, but only a little over two-fifths (44.0 per cent.) of the land area of the country (2,973,890 sq. miles) is represented. The following table shows the growth of the registration area and the death rate therein up to the close of 1916:

REGISTRATION AREA FOR DEATHS

Year	Population of Continental United States	Registration Area for Deaths					
		Population		Land Area		Deaths from all Causes [1]	
		Number	Per Cent. of Total	Square Miles	Per Cent. of Total	Number	Rate per 1,000 Population
Census year 1879–1880	50,155,783	8,538,366	17.0	16,481	0.6	169,453	19.8
Census year 1889–1890	62,622,250	19,659,440	31.4	90,695	3.0	386,212	19.6
Census year 1899–1900	75,994.575	28,807,269	37.9	176,878	5.9	512,669	17.8
Calendar year 1900		30,765,618	40.5	212,621	7.1	539,939	17.6
Calendar year 1901	77,747,402	31,370,952	40.3	212,770	7.2	518,207	16.5
Calendar year 1902	79,365,396	32,029,815	40.4	212,762	7.2	508,640	15 9
Calendar year 1903	80,983,390	32,701,083	40.4	212.762	7.2	524,415	16.0
Calendar year 1904	82,601,384	33,345,163	40.4	212,744	7.2	551,354	16.5
Calendar year 1905	84,219,378	34,052,201	40.4	212,744	7.2	545,533	16.0
Calendar year 1906	85,837,372	41,983,419	48.9	603,066	20.3	658,105	15.7
Calendar year 1907	87,455,366	43,016,990	49.2	603,151	20.3	687,034	16.0
Calendar year 1908	89,073,360	46,789,913	52.5	725,117	24.4	691,574	14.8
Calendar year 1909	90,691,354	50,870,518	56.1	765,738	25.7	732,538	14.4
Calendar year 1910	92,309,348	53,843,896	58.3	997,978	33.6	805,412	15 0
Calendar year 1911	93,927,342	59,275,977	63.1	1,106,734	37.2	839,284	14.2
Calendar year 1912	95,545,336	60,427,247	63.2	1,106,777	37.2	838,251	13.9
Calendar year 1913	97,163,330	63,298,718	65.1	1,147,039	38.6	890,848	14 1
Calendar year 1914	98,781,324	65,989,295	66.8	1,228,644	41.3	898,059	13.6
Calendar year 1915	100,399,318	67,336,992	67.1	1,228,704	41.3	909,155	13.5
Calendar year 1916	102,017,312	71,621,632	70.2	1,307,819	44.0	1,001,921	14.0

[1] Exclusive of stillbirths.

The entire state of North Carolina was admitted to the registration area in 1916. On Jan. 1, 1915, the "model law" for the registration of deaths went into operation in South Carolina, and the registration of that state appears now in the following table.

Death Rates.—The death rate of the registration area for 1912 (13.9

ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, 1906–16

Area	Death Rate from All Causes[1] per 1,000 Population		
	Annual Average 1906–10	1915	1916[7]
Registration area	15.1	13.5	14.0
Registration states[2]	15.0	13.3	13.9
Urban districts[2]	16.3	14.2	15.0
Rural districts	13.4	12.3	12.9
Registration cities in other states	15.9	16.3	15.3
All registration cities[2]	16.2	14.5	15.0
Registration states:			
California	13.9	13.7	13.5
Colorado	14.3	11.3	10.3
Connecticut	15.6	14.9	16.3
Indiana	13.0	12.7	13.6
Kansas	(3)	10.1	10.9
Kentucky	(3)	12.3	12.6
Maine	16.2	15.6	15.7
Maryland	16.0	15.8	16.5
Massachusetts	16.1	14.5	15.2
Michigan	13.6	13.4	15.1
Minnesota	(4)	10.1	10.7
Missouri	(3)	12.0	12.9
Montana	(4)	11.4	12.6
New Hampshire	17.2	16.1	16.1
New Jersey	15.4	13.8	15.0
New York	16.4	14.6	14.8
North Carolina	(4)	[5]17.3	13.1
Ohio	(4)	13.0	14.4
Pennsylvania	15.5	13.8	14.6
Rhode Island	16.7	14.8	15.5
South Carolina	(4)	(6)	1.38
Utah	(4)	9.9	10.4
Vermont	16.1	14.7	15.6
Virginia	(3)	14.2	14.7
Washington	(4)	8.1	7.7
Wisconsin	(4)	10.8	11.8
Registration cities of 100,000 population or over in 1910.			
Birmingham, Ala	(4)	15.6	14.1
Los Angeles, Cal	14.8	12.3	12.3
Oakland, Cal	15.4	11.4	10.5
San Francisco, Cal	16.1	15.9	15.4
Denver, Colo	17.5	13.3	11.5
Bridgeport, Conn	15.5	15.4	19.4
New Haven, Conn	17.3	15.7	17.0
Washington, D. C.	19.6	18.1	17.8
Atlanta, Ga	19.4	15.1	15.3
Chicago, Ill	14.9	14.3	14.5
Registration cities of 100,000 population or over in 1910—*continued*			
Indianapolis, Ind	15.2	14.7	15.6
Louisville, Ky	17.4	15.0	15.0
New Orleans, La	21.7	21.2	18.4
Baltimore, Md	19.5	17.1	18.1
Boston, Mass	17.9	16.1	16.9
Cambridge, Mass	15.1	13.1	13.5
Fall River, Mass	19.7	15.9	17.0
Lowell, Mass	19.4	16.2	17.3
Worcester, Mass	17.1	15.4	17.8
Detroit, Mich	14.8	15.7	19.0
Grand Rapids, Mich.	13.3	12.5	12.2
Minneapolis, Minn.	11.0	11.5	12.4
St. Paul, Minn	11.0	10.7	11.3
Kansas City, Mo	14.6	14.7	14.5
St. Louis, Mo	15.6	13.8	14.9
Omaha, Nebr	13.8	12.2	14.4
Jersey City, N. J	17.7	14.5	14.6
Newark, N. J	17.2	13.1	15.0
Paterson, N. J	15.7	13.2	14.5
Albany, N. Y	18.6	20.0	19.3
Buffalo, N. Y	16.0	14.9	16.1
New York, N. Y	16.9	13.9	13.9
Rochester, N. Y	14.7	13.9	14.4
Syracuse, N. Y	15.2	13.2	15.2
Cincinnati, Ohio	18.1	15.6	16.4
Cleveland, Ohio	14.1	13.4	14.8
Columbus, Ohio	15.1	14.0	15.5
Dayton, Ohio	15.5	13.6	15.2
Toledo, Ohio	14.9	15.4	18.1
Portland, Ore	10.3	8.4	8.0
Philadelphia, Pa	17.7	15.6	16.2
Pittsburgh, Pa	18.0	15.3	17.4
Scranton, Pa	16.3	14.7	14.4
Providence, R. I	17.6	14.6	15.8
Memphis, Tenn	20.6	19.8	(6)
Nashville, Tenn	19.3	17.2	(6)
Richmond, Va	22.5	18.9	19.7
Seattle, Wash	9.8	7.4	7.0
Spokane, Wash	12.8	8.1	7.0
Milwaukee, Wis	13.7	11.4	12.7

[1] Exclusive of stillbirths.
[2] Includes District of Columbia.
[3] Not admitted to registration area until a later date.
[4] Figures for deaths not available for the entire period, 1906–1910.
[5] Includes only municipalities having a population of 1,000 or over in 1910.
[6] Unable to procure transcripts for deaths.
[7] Populations estimated.

per 1,000) was the lowest recorded up to that time. The rate in 1913 (14.1) was slightly higher than that of 1912 but lower than any rate previously recorded. In 1914 the rate fell to the new low record of 13.6, and in 1915 the record was still further lowered to 13.5, but in 1916 the death rate again increased and was at that time 14.0.

DEATH RATES PER 100,000 POPULATION FROM IMPORTANT CAUSES OF DEATH

CAUSE OF DEATH	Annual Average, 1901 to 1905	Annual Average, 1906 to 1910	1913	1914	1915	1916
Typhoid fever	32.0	25.6	17.9	15.4	12.4	13.3
Malaria	4.8	2.6	2.5	2.2	2.3	3.0
Smallpox	3.4	0.2	0.2	0.3	0.3	0.2
Measles	9.0	10.8	12.8	6.8	5.4	11.1
Scarlet fever	11.0	10.6	8.7	6.6	3.6	3.3
Whooping cough	10.9	11.5	10.0	10.3	8.1	10.2
Diphtheria and croup	29.6	22.4	18.8	17.9	15.7	14.5
Influenza	19.9	16.4	12.2	9.1	16.0	26.4
Dysentery	8.6	6.5	5.1	4.6	3.7	5.0
Erysipelas	4.5	4.2	4.0	3.7	3.5	3.7
Rabies	0.1	0.2	0.2	0.1	0.1	0.1
Tetanus	3.5	2.7	2.2	2.1	1.8	1.7
Pellagra	(1)	0.2	1.6	2.3	4.2	3.3
Tuberculosis (all forms)	192.6	168.7	147.6	146.8	145.8	141.6
Tuberculosis of the lungs[2]	170.7	146.8	127.7	127.8	127.7	123.8
Tuberculous meningitis	8.9	9.1	8.6	8.2	8.1	8.0
Syphilis	4.1	5.4	7.2	7.9	8.6	9.6
Cancer and other malignant tumors	67.9	72.6	78.9	79.4	81.1	81.8
Diabetes	11.5	13.7	15.3	16.2	17.5	17.0
Leukemia	1.2	1.5	1.8	2.0	2.0	2.0
Alcoholism (acute or chronic)	6.1	5.8	5.9	4.9	4.4	5.8
Meningitis (total)	31.7	19.4	10.4	8.8	7.4	7.1
Acute anterior poliomyelitis (infantile paralysis)	(3)	(3)	1.4	1.1	1.0	10.1
Apoplexy	69.6	71.7	74.6	77.7	79.3	81.3
Paralysis without specified cause	20.1	16.1	10.7	9.7	9.0	7.2
Epilepsy	4.4	4.2	4.2	3.9	3.8	4.0
Diseases of the circulatory system (total)	161.2	177.7	185.9	187.8	194.2	197.7
Organic diseases of the heart	124.2	133.2	138.6	141.8	147.1	150.1
Diseases of the respiratory system (total)	220.5	188.1	164.3	157.7	162.5	165.4
Acute bronchitis	21.4	15.2	10.4	9.7	9.7	9.4
Chronic bronchitis	15.4	11.1	7.6	7.7	7.7	6.8
Bronchopneumonia	32.9	40.4	49.1	48.7	49.8	49.0
Pneumonia (total)	125.5	103.0	83.2	78.3	82.9	88.3
Pleurisy	4.6	4.1	3.5	3.7	3.4	3.6
Diseases of the digestive system (total)	195.2	193.2	163.2	151.0	141.1	148.0
Ulcer of the stomach	2.9	3.6	4.0	4.1	4.3	4.6
Diarrhea and enteritis (under 2 years)	89.0	96.2	75.2	66.0	59.5	65.6
Diarrhea and enteritis (over 2 years)	20.2	16.7	15.0	13.4	12.2	13.7
Appendicitis and typhlitis	11.0	11.2	12.1	12.3	12.5	12.8
Hernia, intestinal obstruction	13.0	12.9	11.6	11.7	11.3	11.3
Cirrhosis of the liver	14.4	14.3	13.4	12.9	12.5	12.3
Simple peritonitis (nonpuerperal)	10.8	6.1	2.7	2.8	2.3	1.9
Acute nephritis	9.6	10.1	10.4	9.0	8.9	8.3
Bright's disease	87.4	87.4	92.5	93.4	95.8	96.9
Puerperal septicemia	6.3	6.8	7.2	7.1	6.3	6.7
Suicide	13.9	16.0	15.8	16.6	16.7	14.2
Accident	84.9	86.0	85.3	78.5	76.3	83.9
Homicide	2.9	5.9	7.2	7.3	6.9	7.1

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[1] Less than one-tenth of one per 100,000 population.

[2] Includes acute miliary tuberculosis.

[3] Not separately reported.

The annual crude death rates per 1,000 population, for all registration states and cities of 100,000 population or over, for the years 1906-1910, 1915 and 1916, are given in the table on the preceding page. It must be remembered in comparing crude death rates that such figures are affected by peculiarities of the distribution of population. Color, race, sex and age must be considered. The rates shown for the large American cities are all low and without exception indicate a very favorable mortality. The high rates shown for cities of the South are due to the large proportion of colored population, but a very marked decrease can be shown in 1916 in some of these cities. The low death rates shown for Seattle, Portland and

BIRTH RATES IN THE REGISTRATION AREA, 1916

(*Populations estimated*)

Area	Number of Births[1]	Birth Rate[1] per 1,000 Population	Infantile Mortality per 1,000 Births[2]
Registration area	818,983	24.8	101
Urban areas	507,736	25.8	104
Rural areas	311,247	23.4	97
White	799,817	24.9	99
Colored	19,166	22.8	185
Registration states			
Connecticut	35,351	28.4	101
Maine	16,033	20.8	108
Maryland	33,631	24.7	121
Massachusetts	93,497	25.1	100
Michigan	86,840	28.4	96
Minnesota	55,459	24.3	70
New Hampshire	9,664	21.8	115
New York	241,456	23.5	94
Pennsylvania	217,449	25.5	114
Rhode Island	14,634	23.8	111
Vermont	7,768	21.4	93
Registration cities of 50,000 population or over in 1916:			
Bridgeport, Conn.	4,598	37.8	106
Hartford, Conn.	3,925	35.4	101
New Britain, Conn.	1,973	36.7	112
New Haven, Conn.	5,106	34.1	88
Waterbury, Conn.	2,519	29.0	139
Washington, D. C. (total)	7,201	19.8	106
White	4,979	18.8	83
Colored	2,222	22.3	158
Portland, Me.	1,371	21.5	117
Baltimore, Md. (total)	14,542	24.7	122
White	12,278	24.5	104
Colored	2,264	25.6	219
Boston, Mass. (total)	19,577	25.9	105
White	19,214	26.0	104
Colored	363	22.3	193
Brockton, Mass.	1,471	21.8	92
Cambridge, Mass.	2,691	23.8	91
Fall River, Mass.	3,689	28.7	173
Holyoke, Mass.	1,598	24.5	196
Lawrence, Mass.	2,848	28.3	116
Lowell, Mass.	3,287	29.0	146
Lynn, Mass.	2,206	21.5	87
Malden, Mass.	1,008	19.7	66
New Bedford, Mass.	3,499	29.6	139
Somerville, Mass.	1,999	23.0	67
Springfield, Mass.	3,278	30.9	95
Worcester, Mass.	4,941	30.3	101
Detroit, Mich.	24,289	42.1	112
Flint, Mich.	1,756	32.1	137
Grand Rapids, Mich.	3,131	24.4	75
Saginaw, Mich.	1,219	21.9	111
Duluth, Minn.	2,176	23.0	81
Minneapolis, Minn.	8,793	24.2	82
St. Paul, Minn.	5,242	21.2	68
Manchester, N. H.	2,166	27.7	157
Albany, N. Y.	2,280	21.5	97
Binghamton, N. Y.	1,507	27.9	136
Buffalo, N. Y.	13,088	27.9	114
New York, N. Y. (total)	137,923	24.6	93
White	135,119	24.6	92
Colored	2,804	24.0	169
Rochester, N. Y.	6,816	26.3	86
Schenectady, N. Y.	2,138	21.5	79
Syracuse, N. Y.	3,853	24.8	100
Troy, N. Y.	1,335	17.1	96
Utica, N. Y.	2,441	27.9	111
Yonkers, N. Y.	2,503	25.1	90
Allentown, Pa.	1,894	29.8	110
Altoona, Pa.	1,496	25.5	105
Erie, Pa.	2,322	30.9	111
Harrisburg, Pa.	1,455	20.2	105
Johnstown, Pa.	2,348	34.3	132
Lancaster, Pa.	1,156	22.7	110
Philadelphia, Pa. (total)	40,360	23.6	105
White	38,208	23.7	102
Colored	2,152	21.7	160
Pittsburgh, Pa. (total)	16,406	28.3	115
White	15,801	28.7	113
Colored	605	21.5	177
Reading, Pa.	2,578	23.5	125
Scranton, Pa.	3,623	24.7	131
Wilkes-Barre, Pa.	1,986	25.9	111
York, Pa.	968	18.7	101
Pawtucket, R. I.	1,353	22.8	132
Providence, R. I.	5,981	23.5	110

[1] Exclusive of stillbirths. [2] Deaths of infants under one year of age per 1,000 births.

certain other cities are dependent to some extent on the favorable age distribution of the population. With the report for 1911 the Bureau of the Census began the publication of "corrected" or "standardized" death rates, which permit an approximately exact comparison of the mortality of different localities in the registration area of the United States (*A. Y. B.*, 1913, p. 746).

Causes of Death.—The death rates for certain important causes of death per 100,000 population in the registration area of the United States from 1901 to 1916 are given in the accompanying table, compiled from the report of the Bureau of the Census for the year 1916.

There is a marked increase in the number of deaths, 1,001,921, in 1916, over the preceding year. Although a grateful decrease is shown in the death rate from tuberculosis, there is an increase in pneumonia, and in heart, kidney and digestive diseases.

ANNUAL CRUDE DEATH RATES IN PRINCIPAL COUNTRIES PER 1,000 PERSONS LIVING, 1881–1915

(Annual Report, Registrar-General of England and Wales, 1915)

Countries (arranged in order of rates in 1901–5)	Quinquennial Periods						Years			
	1881–1885	1886–1890	1891–1895	1896–1900	1901–1905	1906–1910	1912	1913	1914	1915
Russia (European)	35.4	33.2	35.8	31.9	30.9	....	....	....	....	....
Chili	26.9	35.2	32.6	28.8	30.2	31.3	29.7	30.1	27.8	....
Ceylon	....	25.1	28.3	27.0	26.7	30.8	32.4	28.4	32.2	25.2
Hungary	33.1	32.1	31.8	27.9	26.4	25.0	23.3	....	....	....
Spain	32.6	30.9	30.1	28.8	26.0	24.3	21.8	22.1	22.1	....
Roumania	26.2	28.7	31.0	27.4	25.5	26.0	22.9	25.9	23.8	....
Austria	30.1	28.9	27.9	25.6	24.2	22.3	20.5	....	....	....
Jamaica	....	23.5	22.0	22.1	22.6	24.4	25.1	21.7	21.4	21.6
Bulgaria	17.7	18.9	27.8	23.9	22.5	23.8	....	....	....	....
Servia	24.5	25.9	28.9	24.8	22.4	24.3	21.1	....	....	....
Italy	27.3	27.2	25.5	22.9	21.9	21.2	18.2	18.7	17.9	....
Japan	....	20.6	21.1	20.7	20.9	21.0	20.0	19.5	....	....
German Empire	25.3	24.4	23.3	21.2	19.9	17.5	15.6	[2] 15.0	....	....
France	22.2	22.0	22.3	20.7	19.6	19.2	17.5	17.7	[3] 19.6	....
Prussia	25.4	24.0	22.8	21.0	19.6	17.3	15.5	[1] 14.9	....	....
Finland	22.2	20.0	20.5	19.0	18.0	17.4	16.3	16.1	15.6	....
Ireland	18.0	17.9	18.5	18.1	17.6	17.3	16.5	17.1	16.3	17.6
Switzerland	21.3	20.4	19.8	18.1	17.5	16.0	14.1	14.3	13.8	[1] 13.3
Belgium	20.6	20.2	20.1	18.1	17.0	15.9	14.8	....	....	....
Scotland	19.6	18.8	19.0	18.0	17.0	16.1	15.3	15.5	15.5	17.1
England and Wales	19.4	18.9	18.7	17.7	16.0	14.7	13.3	13.8	14.0	[4] 15.7
The Netherlands	21.4	20.5	19.6	17.2	16.0	14.3	12.3	12.3	12.4	12.4
Sweden	17.5	16.4	16.6	16.1	15.5	14.3	14.2	13.6	[1] 13.8	[1] 14.6
Denmark	18.4	18.7	18.6	16.4	14.8	13.7	13.0	12.5	12.6	12.8
Norway	17.2	17.0	16.8	15.6	14.5	13.8	13.5	13.2	13.5	[1] 13.3
Ontario, Province of	11.4	11.0	10.6	11.6	13.0	14.0	12.4	12.7	11.8	12.0
Australian Com'lth	15.7	14.8	13.3	12.7	11.7	10.7	11.2	10.8	10.5	10.7
New Zealand	10.9	9.9	10.1	9.6	9.9	9.7	8.9	9.5	9.3	9.1

ANNUAL BIRTH RATES IN PRINCIPAL COUNTRIES, PER 1,000 PERSONS LIVING, 1881–1915

(Annual Report, Registrar-General of England and Wales, 1915)

Countries (arranged in order of rates in 1901–5)	Quinquennial Periods						Years			
	1881–1885	1886–1890	1891–1895	1896–1900	1901–1905	1906–1910	1912	1913	1914	1915
Russia (European)	49.1	48.2	48.2	49.3	47.7	....	....	....	....	....
Bulgaria	37.2	35.9	37.5	41.0	40.6	42.1	....	....	....	....
Roumania	41.8	40.9	41.0	40.2	39.4	40.3	43.4	42.1	42.5	....
Jamaica	....	36.8	38.6	38.9	39.0	37.5	38.8	35.3	38.9	34.6
Ceylon	....	30.3	31.7	37.2	38.8	37.5	33.3	38.6	38.1	37.0
Servia	46.3	43.7	43.3	40.1	38.7	39.1	38.0	....	....	....
Hungary	44.6	43.7	41.7	39.4	37.4	36.7	36.3	....	....	....
Chili	39.1	35.5	37.0	35.0	36.4	38.3	38.7	39.5	37.0	....
Austria	38.2	37.8	37.4	37.3	35.6	33.6	31.3	....	....	....
Spain[1]	36.4	36.0	35.3	34.3	35.3	33.6	32.6	30.4	29.8	....
Prussia	37.4	37.3	36.9	36.5	34.8	32.3	28.9	[1] 28.2	....	....
German Empire	37.0	36.5	36.3	36.0	34.3	31.6	28.3	[2] 27.5	....	....
Italy	38.0	37.5	36.0	34.0	32.6	32.7	32.4	31.7	31.1	....
Japan	....	28.5	28.6	31.1	31.7	32.9	33.4	33.3	....	....
The Netherlands	34.8	33.6	32.9	32.1	31.5	29.6	28.1	28.1	28.2	26.2
Finland	35.5	34.5	31.8	32.6	31.3	30.9	29.1	27.1	26.9	....
Scotland	33.3	31.4	30.5	30.0	29.2	27.6	25.9	25.5	26.1	23.9
Denmark	32.4	31.4	30.4	30.0	29.0	28.2	26.7	25.6	25.6	24.2
Norway	31.2	30.8	30.2	30.1	28.6	26.3	25.6	25.3	25.2	[1] 23.8
England and Wales	33.5	31.4	30.5	29.3	28.2	26.2	23.3	24.1	23.8	22.0
Switzerland	28.6	27.5	27.7	28.5	27.8	26.0	24.1	23.1	22.5	[1] 19.5
Belgium	30.7	29.3	28.9	28.9	27.7	24.7	22.6	....	....	....
New Zealand	36.3	31.2	27.7	25.7	26.6	27.1	26.5	26.1	26.0	25.3
Australian Com'lth	35.2	35.2	32.4	27.7	26.4	26.7	28.7	28.3	28.1	27.3
Sweden	29.4	28.8	27.4	26.9	26.1	25.4	23.8	23.2	22.9	[1] 21.6
Ireland	23.9	22.8	23.0	23.3	23.1	23.4	23.0	22.8	22.6	22.0
Ontario, Province of	22.4	22.0	19.9	20.1	21.8	23.7	22.4	24.0	24.0	24.2
France	24.7	23.1	22.3	21.9	21.2	19.9	19.0	19.0	[3] 18.0	....

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[1] Figures are provisional. [2] Provisional figures relating to 24 States. [3] Provisional figures relating to 77 departments. [4] Civil population only.

Deaths in small children from intestinal diseases increased, and infantile paralysis, during the epidemic of 1916, claimed a very large proportion. Fatalities due to accident markedly increased above those of the two preceding years, in spite of the "safety-first" campaign.

Birth Rates.—The collection of both birth and death statistics was authorized by the permanent Census Act, approved March 6, 1902, to be obtained from the registration records of such states and municipalities as possessed records affording satisfactory data. Since the passage of this act the Census Bureau has made annual collections of mortality statistics from a steadily increasing area, but until recently very few of the states have maintained reliable birth-registration systems. In this respect the United States has lagged far behind a number of the leading European countries. A beginning was made in this country in 1915, however, and statistics are now available relating to an area having a population of one-third of that of the whole country. During the year the state of Maryland was added to the birth registration area. The table on page 669 gives the birth-rates and infantile-mortality rates for the calendar year 1916.

International Statistics.—In the preceding tables are given birth and death rates per 1,000 persons living in the principal countries for which complete and accurate statistics are available, those for most of the warring countries not being available for 1915.

XXVI. ANTHROPOLOGY, ETHNOLOGY, PSYCHOLOGY, AND PHILOSOPHY

ANTHROPOLOGY AND ETHNOLOGY

GEORGE GRANT MACCURDY

General Survey.—Anthropology and ethnology are among the sciences that are affected adversely by war conditions, and now that the United States also is in the war, these untoward conditions are correspondingly accentuated. And yet progress is being made even in unexpected directions, such, for example, as the founding of new journals and new professorships of anthropology. In July, appeared the first number of the *International Journal of American Linguistics* (New York, Douglas C. McMurtrie), a quarterly, edited by Franz Boas and Pliny E. Goddard, with the assistance of William Thalbitzer of Copenhagen and C. C. Uhlenbeck of Leyden. The principal article in the first number is on the Mexican dialect of Pochutla, Oaxaca, by Professor Boas. Dr. Truman Michelson of the Bureau of American Ethnology has been appointed to the new professorship of ethnology in George Washington University, retaining, however, his position in the Bureau. In war-ridden Europe similar progress is to be noted. A new journal of anthropology, entitled *Giornale per la Morfologia dell' Uomo e dei Primati*, has been founded by Prof. G. L. Sera of the University of Pavia. At the University of Geneva a new chair of anthropology has been founded, with Prof. Eugène Pittard as its first occupant.

Domestication of the Reindeer.—According to Dr. B. Laufer (*Mem. Am. Anthrop. Assoc.*, iv, No. 2, 1917), the domestication of the reindeer is a comparatively recent event. There is no trace of it in aboriginal America; hence, Old-World domestication of the reindeer must have taken place after the peopling of America. The first notice of domesticated reindeer is by Huei Shen, a Chinese monk, who in 499 A.D. gave a fabulous account of Fu-sang. He speaks of the breeding of horses, cattle and reindeer combined. There is but one known locality where such a combination exists, namely, the region of Lake Baikal, particularly among the Soyot. This Laufer believes to be the original center of reindeer domestication. From the Samoyed it spread eastward to the Tungusions, and from the latter to the Yakut, Chuckchi, and Koryak; and westward it spread to the Ugrian tribes of the Ural and the Lapp. The woodland reindeer were first domesticated; they were gradually replenished by the capturing of wild tundra reindeer with the movement toward the north, until finally the "latter breed" preponderated or prevailed exclusively.

Antiquity of Man.—The question of the antiquity of man at Vero, Fla., came up for discussion in the last issue of the YEAR BOOK (p. 658). Since then further light has been thrown on the problem. Prof. Edward W. Berry of Johns Hopkins University has made a study of the plant remains associated with human bones and artifacts and fossil animal remains. His conclusion is that there is no appreciable difference between the ages of the middle and the upper layer (the two in question), and that they represent a maximum age of three or four thousand years. He is sure that the two deposits are relatively very young, although some of the plants are indicative of conditions somewhat different from those prevailing at the present time in that part of Florida. N. C. Nelson of the American Museum of Natural History has shed new light on the probable age of the potsherds from Vero by a stratigraphic study of a large shell mound on Indian River at Oak Hill, Fla. In the lower part of the mound he found no pottery, although in the middle deposits were abundant evidences of plain pottery of the type from Vero and near the surface appeared a stamped and decorated ware. Vero would seem, therefore, to be contemporaneous with the middle shell-mound epoch. That Vero probably represents a concentration of fossil remains is indicated by the great variety and relative abundance of these remains and by the topographic features of the place. A concentration due solely to natural causes takes time; besides, it opens the door not only to forms then or recently living but also to those of still older epochs. It does not follow, therefore, that man and the *Mylodon* were contemporaneous at Vero.

It is generally conceded that cultural remains are a much more sensitive chronometer than are animal remains. A lapse of time indicated by the faunal changes at Vero should be marked by even more profound changes in the character of the artifacts, but we find nothing of the kind. To summarize the evidences of man's antiquity at Vero, the human bones and cultural remains all have every appearance of belonging to one and the same age, as if they might have come even from the same village site or burying ground. They point to a period which might well have continued down to the close of the prehistoric period in Florida. In no respect whatsoever do they resemble the remains from the Pleistocene of any known part of the world. The bone points are of a type that is widely distributed. They can be duplicated in collections from the southern mounds as well as the ruined pueblos of the Southwest. They represent the universal sewing implement of savage women and persist even to the present day. Their use is well known in basketry and other textile operations. The bone fish hooks are exactly like those from scores of sites along the Atlantic coast as well as inland. In the Yale Museum are two such from an Indian grave at Beach Park, Clinton, Conn., which also contained arrowheads and a polished stone celt. The same is true of the pottery, which even in its crudest form is never found in the horizon of the archaic argillite culture of the Delaware valley for instance. In a word, there is nothing new or unexpected in the particular combination of cultural and human skeletal remains at Vero. Among the bone implements sent to New Haven for study was the sting of a sting-ray. This sting is a ready-made implement well known to the Indians. It is found in prehistoric sites along the Atlantic coast. In the Academy of Natural Sciences at Philadelphia there is a good example from a mound near Crystal River, Citrus County, Fla. On April 6 E. H. Sellards reported by letter the finding in the third layer at Vero of a fragment from the head end of a slender bone pin with delicate criss-cross incised decoration, also two perforated teeth of the shark. The pin is of the type found in Florida mounds. There is no reason to suppose that the two perforated teeth antedate the mound culture. The antiquity of this combination of remains would seem to be fairly well represented in the age ascribed by Professor Berry to the plant remains from both layers, *viz.*, a maximum of three or four thousand years.

It is only when one considers the formidable array of extinct animals from the two layers in question that apparent lack of harmony arises. Even in the third layer we still have *Elephas columbi*, *Mastodon* (*Mammut*) *americanum*, *Chlamydotherium*, and a species of horse and of tapir. Here is the first element of uncertainty, for even paleontologists are not yet in a position to say just when these various forms became extinct in Florida. That the *Mastodon* lived on until recent times even in more northern climes, there can be little doubt. Of the extinct vertebrate fauna mentioned in Dr. Sellards' last paper, *Smilodon*, *Mylodon*, peccary and camel do not occur in the third layer, and hence in the opinion of the author might properly be excluded from the discussion. If the extinct fauna in question was contemporary with the race that left the Vero type of culture, evidences thereof in other parts of the country, where both are known to have existed, would not still be lacking, unless the culture appeared earlier or the fauna persisted longer in Florida than elsewhere. Of these two alternatives the persistence of the fauna is the more easily believable. At all events, in the face of the irreconcilable differences between the combination of anthropological phenomena on the one hand and of paleontological on the other, and until there is forthcoming exact evidence as to the date of disappearance in Florida of the extinct vertebrates in this list, to say that one is assured of the accuracy of the conclusion that the human remains and artifacts from Vero are of the Pleistocene period is to base one's conclusion on a forced correlation.

Another bit of stratigraphic work has been done by Mr. Nelson. In Mammoth Cave, Kentucky, he discovered a stratified relic-bearing deposit ranging from a few inches to about four feet thick and forming part of the floor débris of the large entrance vestibule. This deposit is composed of what is usually termed kitchen refuse—ashes, animal and even human bones, shells, and artifacts of stone and bone. Especially suggestive was the total absence of maize, pottery and the finer forms of polished stone work otherwise so characteristic of the region in question. We have here a type of culture preceding that of the historic Indian.

The Abbé H. Breuil has added to our knowledge of the existence of paleolithic man in Spain by the discovery of numerous sites in the province of Badajoz and of one important station across the border at Arronches, Portugal. They represent the early paleolithic epochs known as Chellean, Acheulian, and Mousterian. He has made also a study of the *terres noires* of the Laguna de la Janda in the extreme south of Spain. His conclusion, opposed to that of certain Spanish authors, is that the *terres noires* deposits are more recent than Chellean, Acheulian, and Mousterian artifacts, which are found in these deposits only as derived specimens, and which belong to the ancient gravel deposits that underlie the *terres noires*. The latter are post-paleolithic, and are to be compared with the post-Pleistocene peat bogs of northern France.

Canada and the Northern States.—The incomparable ethnological collection gathered by D. Jenness, anthropologist of the Canadian Arctic Expedition, has reached Ottawa. His Eskimo material on folklore and physical anthropology is ready for publication. C. M. Barbeau has made further progress in his researches into Canadian folklore of European origin. His second series of Canadian-French folk tales has been published in the *Journal of American Folklore.* Data on the trails of Canada have been compiled by Harlan I. Smith and Wintemberg. The former has completed also a monograph on the shell heaps marking prehistoric seacoast village sites in Canada. A complete series of aboriginal decorative and symbolic motives including several hundred examples is now on exhibition at the Archæological Bureau of the Geological Survey, Ottawa, for the special benefit of Canadian manufacturers. Similar aid has been extended by the American Museum of Natural History to New York and visiting manufacturers, the work being in charge of a textile expert, D. C. Crawford. Thus are the manufacturers of both countries thoroughly awake to the artistic and commercial value of aboriginal American designs.

J. N. B. Hewitt of the Bureau of American Ethnology has made a study of the origin, development and functions of the League of the Iroquois. While thus engaged he was selected as an official delegate from the Council of the Six Nations to attend a condolence and installation ceremony at Muncietown. In this he took a leading *rôle,* requiring the intoning of an address of comforting in the Onandaga language, and also acted the part of the Seneca chiefs. He also gained valuable information concerning the Iroquois clans.

Donald A. Cadzow, representing the Museum of the American Indian, New York, has completed a collecting trip through the Canadian Northwest. At Edmonton he collected material from the woodland Cree. He then visited the Chipewyans of Slave River, the Slaveys at the mouth of the Mackenzie, the Copper Eskimo of the Bear River country, the Eskimo of the Mackenzie delta, and the Loucheux near Fort MacPherson and on the Bat and Porcupine Rivers. A representative collection was obtained from the Copper Eskimo, which includes costumes, fishing and hunting paraphernalia, and ceremonial objects.

J. R. Walker of the American Museum of Natural History has completed his long and exhaustive study of the Dakota Sun Dance and the philosophical and religious beliefs underlying it. His paper, in press at the end of the year, will constitute one of the best and by far the most satisfactory studies of the sun dance so far made.

Prof. Franz Boas, honorary philologist of the Bureau of American Ethnology, has completed his manuscripts on the *Ethnology of the Kwakiutl Indians* and *Kutenai Tales*. He has in preparation an extended treatise on the Salishan stock, showing by means of maps the distribution of the Salish dialects at various periods. In connection with this proposed memoir, H. K. Haeberlin has made a detailed study of Salish basketry. Leo J. Frachtenberg, also of the Bureau, has in preparation a memoir on the Quileute, the material pertaining to which is extensive.

S. A. Barrett of the Milwaukee Public Museum has surveyed an interesting group of 46 mounds on the south shore of Buffalo Lake, Wisconsin. They vary in size from small conical mounds to large effigy mounds. A majority of these mounds he excavated. Dr. Barrett believes that he has found the solution of the problem of the intaglio mounds of the state, *viz.*, that they are the foundations for effigies which were later raised above ground. In other words, the builders first made an excavation of the size and shape required and then built up, stratum by stratum, the mound itself, placing burials, altars, etc., in the mound, and finally raising it to its present level above ground. The most interesting feature of the burial mounds was a large pit of cache bundle reburials, found in the center of a large conical mound. There were various other single burials in the flesh, besides very many interesting features concerning ceremonial fires and sacrificial and repository altars.

New York and New England.—Archeological explorations on Long Island have been made by the staff of the Museum of the American Indian. G. H. Pepper opened an Indian cemetery at Hewlett in which the graves were especially rich in copper ornaments. A number of shell heaps on Long Island were investigated by F. H. Saville. W. K. Moorehead of the Department of Archeology in Andover has mapped the Indian sites on the Vermont shore of Lake Champlain and collected several hundred artifacts. No large prehistoric village sites were found about the shores of the lake. A majority of the villages were on streams some distance from the lake.

Alaska and the Pacific Coast.—The University Museum, Philadelphia, has had two expeditions in Alaska. In the northern part W. B. Van Valin collected specimens and procured motion pictures of the ceremonies of the Eskimo, while Louis Shortridge made a study of the mythology and ancient customs of the Tlingit Indians in the southeastern part. John P. Harrington, for the Bureau of Ethnology, has completed researches among the Chumashan Indians of California, from which important results already appear, one of which is the genetic relationship of Chumash and Washo. Sapir includes Washo in the Hokan group established by Dixon and Kroeber. Harrington had previously announced the genetic relationship of Chumash and Yuman, a typical Hokan group of dialects. Thus the linking of Washo with Chumash becomes an established fact. According to Sapir the Hokan stock can now be stated to include Shasta-Achomawi, Chimariko, Karok, Pomo, Yana, Esselen, Salinan, Chumash, Yuman, Washo, Seri and Chontal. The elimination of Washo leaves Yuki the only California language that can be called "isolated," and its lone distinction will probably not be for long.

Algonquian and Osage.—Studies of the numerous Algonquian languages, especially the Sauk and Fox of Iowa and Oklahoma, have been prosecuted by Truman Michelson. Incidentally he obtained much information concerning their social and ceremonial organizations. A long text written on the origin of the White Buffalo dance in the native syllabary was restored phonetically, and a long myth of the culture hero of the Fox Indians was recorded. While in Oklahoma Dr. Michelson gathered important data on the rapidly disappearing Peoria language and folklore. Francis La Flesche, also of the Bureau of Ethnology, has phonographically recorded, transcribed and elucidated Osage rituals composed for the purpose of preserving and transmitting the religious concepts of the tribe.

Southeastern and Southern Indians.—James Mooney of the Bureau of Ethnology has studied the sacred formulas of the Cherokee, the originals of which, recorded many years ago in the Cherokee syllabary invented by Sequoyah, are in the Bureau's possession. Our knowledge of the early history, ethnology and philology of the southeastern Indians, notably those belonging to the Muskhogean family (Creeks, Chickasaw, Choctaw, etc.) has been increased by the researches of John R. Swanton. His comparative vocabulary compilation includes 13 languages and dialects of the southeastern tribes. Dr. Swanton also visited the Houma, Chitimachi and Koasati Indians of Louisiana. A great many pages of texts were secured from the Koasati. This language, although closely related to Alabama, differs from it more than has been supposed. W. K. Moorehead, who is directing archeological explorations in Tennessee and Arkansas, reports the discovery of an important site on the lower Arkansas.

The Southwest.—Under the joint auspices of the Bureau of Ethnology and the Museum of the American Indian, excavations lasting three months were made at the ruined pueblo of Hawikuh, one of the celebrated "Seven Cities of Cibola," in western New Mexico. The work, in charge of F. W. Hodge, was confined to the cemeteries surrounding the ruin. These proved to be of such great magnitude that it will take months to explore them. Many ceremonial and other objects were found with the burials, including turquoise mosaic combs, encrusted ear pendants, the complete regalia of a member of the Priesthood of the Bow, and many pottery vessels with the so-called glaze decoration. Of the objects listed by Coronado as having been sent to Spain from this region, all but one have been duplicated by finds of the summer of 1917. Complete excavation of the cemeteries and the uncovering of the pueblo itself should result in the bringing together of enough material to portray adequately the daily and ceremonial life of the ancient Zuñians.

J. Walter Fewkes of the Bureau continued archeological excavations in the Mesa Verde National Park, Colorado, attention being devoted especially to one of a cluster of 16 ruins known as the Mummy Lake group. This large pueblo, called Far View House, revealed when completely uncovered a new type of prehistoric structure, the form and character of which give important information on the close relation of pueblos and cliff dwellings. Dr. Fewkes also conducted a reconnaissance of the prehistoric remains in eastern Utah, which mark the northern limits of Pueblo culture in this section. Notable among these early structures are the stone towers found throughout this great area.

The investigation of Pueblo chronology was continued by the American Museum of Natural History. The work of the season was confined chiefly to defining the southeastern limits of the Pueblo area and to tracing out the chronological connections between the Chaco group of ruins and adjoining sites. Extensive excavations were again carried on at the famous Aztec Ruin at Aztec, N. M. The year's work yielded an unusually large series of specimens, comparable in uniqueness and quality with those secured from Pueblo Bonito many years ago. A large part of this ruin is now uncovered and the standing walls strengthened and capped with cement, so that they will remain as a permanent exhibit of southwestern architecture.

The Museum of New Mexico was formally opened by dedication ceremonies, November 24-28, 1917, at Santa Fe. It contains exhibits of Southwestern prehistoric archeology gathered and installed by the School of American Research (Dr. E. L. Hewett, Director) of the Archaeological Institute of America.

Middle America and the West Indies.—The Museum of the American Indian has had expeditions in Guatemala, British Honduras and Costa Rica, as well as the West Indies. The work in the first two countries mentioned was under the direction of Prof. M. H. Saville, who revisited Copan and Quirigua after an absence of 25 years and explored the region of Lake Amatitlan. Alanson B. Skinner carried on archeological investigations in the region of Las Mercedes, on the east coast of Costa Rica, the active work at this place covering a period of seven months The major part of the work was devoted to the great cemetery of Las Mercedes. The prime object of the expedition was the study of the deep stone graves. Several hundred of these were opened, including single, double, triple and quadruple forms. Superposition was the usual procedure where more than one were buried, but some of the graves were joined at the sides. The material obtained consisted of over 1,200 pottery vessels, stone slabs and stools, also jade carvings and gold ornaments. The latter part of the trip included an expedition to the Talamanca region, where an ethnological study was made of the Bri Bri Indians. Data were obtained concerning their ceremonial life and material culture, and a representative collection of utilitarian and ceremonial objects was gathered.

Theodoor de Booy continued his investigations in the West Indies, his first work being in the Virgin Island group, where the islands of St. Thomas, St. John, and St. Croix were visited. A general survey of St. Thomas was made, with the result that a village site was located. It was completely excavated, and over 20 vessels of an unusual type, hitherto unknown from the West Indies, were found. Various intrusive objects typical of the Tainan culture were discovered. These included a swallowing-stick made from a sea-cow rib; it was of the usual form, as represented by six other known examples, these being from the island of Santo Domingo. The St. Thomas specimen contains inlays of mother-of-pearl in the eyes and mouth. The west coast of Porto Rico was visited, and extensive excavations were conducted in a hitherto unexplored shell heap. Several burials were found, and numerous specimens, including three complete vessels, were obtained.

Porto Rico has been a fruitful field of activity for the Field Museum, Chicago, both the folklore and the prehistoric archeology being in charge of J. Alden Mason. Some of the results of his work have appeared in the *Journal of American Folklore* and the *Proceedings of the Nineteenth International Congress of Americanists.*

Students of the archeology of Middle America should read two works which have just appeared. One of these, belonging to the handbook series of the American Museum, is *Ancient Civilizations of Mexico and Central America,* by H. J. Spinden. The book contains 238 pages and is fully illustrated. The other, *History of the Spanish Conquest of Yucatan and of the Itzas,* by Philip Ainsworth Means, forms Volume VII of *Papers of the Peabody Museum of American Archæology and Ethnology.*

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PSYCHOLOGY

HERBERT SIDNEY LANGFELD

General and Theoretical.—Many psychologists are engaged in work for the national defence along the lines of their profession. A psychological committee of the National Research Council has been formed, composed of nine of the leading psychologists of the country under the chairmanship of Prof. R. M. Yerkes, which has developed many lines of fruitful and apparently serviceable endeavor. Methods and plans for the psychological examination of enlisted men in four National Army cantonments have been perfected. A committee on classification of personnel has been organized in the War Department. The committee is also assisting the Signal Corps in the organization of methods for the selection of aviators; many psychologists have been commissioned to carry on this work. Prof. W. D. Scott's method of rating individuals for selection for commissions has proven highly successful, as has also Prof. R. Dodge's method of testing gun pointers in the Navy.

The American Psychological Association celebrated its twenty-fifth anniversary at the end of December, 1916. In his presidential address R. Dodge discussed "The Laws of Relative Fatigue" (*Psych. Rev.*, March, 1917). He comes to the significant conclusion that relative fatigue "is not exhaustion, but prevents it. It is a conservator of organic equilibrium, as well as a condition of organic development." G. Stanley Hall wrote upon "Practical Relations between Psychology and the War" (*Jour. Appl. Psych.*, March, 1917), John Dewey upon "The Need of a Social Psychology" (*Psych. Rev.*, July, 1917), and Joseph Jastrow upon "Varieties of Psychological Experience" (*ibid.*).

A new journal of general interest entitled *Psychobiology* has been started by Knight Dunlap. It will have an overlapping position between the fields of psychology, biology and pharmacology. E. B. Titchener (*Am. Jour. Psych.*, April, 1917) criticises Stumpf's latest statement of his doctrine of feeling-sensations. He also answers at length the superficial criticisms of his theory by a German psychologist (*Psych. Rev.*, Jan., 1917). G. Stanley Hall has made an extensive psychological analysis in the field of religion in his *Jesus, the Christ, in the Light of Psychology* (Doubleday, Page, 1917).

The behaviorists continue to develop their system. J. B. Watson has published the first chapter of his forthcoming book, *Human Psychology*, in which he describes his latest views relative to the nature and methods of behavior psychology (*Psych. Rev.*, Sept., 1917). H. G. Kenagy (*ibid.*) applies behavior methods to social psychology. In "The Nature of Mental Process" (*ibid.*, May, 1917) H. A. Carr takes a midway position between subjectivism and behaviorism. M. W. Calkins further explains her self psychology and concludes that the soul remains only as an historic concept (*ibid.*, July, 1917).

Experimental Human Psychology.—One of the most important contributions to experimental psychology is *Studies in Psychology* contributed by colleagues and former students of E. B. Titchener in honor of his twenty-fifth year of teaching at Cornell (Worcester, L. N. Wilson, 1917). The articles are from every field of psychology and show the wide influence of that eminent scholar. Many of the laboratories have been especially interested in the development of new instruments for more exact work. Mention should be made of K. Dunlap's "A New Complication Apparatus" (*Jour. Exper. Psych.*, Feb., 1917); A. P. Weiss's "A Limen Color Mixer" (*Am. Jour. Psych.*, July, 1917); C. E. Ferree's and G. Rand's "Radiometric Apparatus for use in Psychological and Physiological Optics" (*Psych. Monogr.*, xxiv., 1917); and Prentice Reeve's "Color Filters and Neutral Filters for Visual Experiments" (*Psych. Bull.*, July, 1917). S. S. George has made a contribution to psychophysical methods in which he urges the maintenance of a constant attitude in such experiments (*Am. Jour. Psych.*, Jan., 1917). Another contribution to methods is E. G. Boring's "Urban's Tables and the Method of Constant Stimuli" (*ibid.*, April, 1917). Of the sensations vision has received the most attention. Valuable papers are L. T. Troland's "On the Measurement of Visual Stimulations Intensities (*Jour. Exper. Psych.*, Feb., 1917), and C. E. Ferree's and G. Rand's "Some Areas of Color Blindness of an Unusual Type in the Peripheral Retina" (*ibid.*, Aug., 1917).

Much work has been done upon imagery and memory. E. L. Thorndike has found that visualizers have very little advantage over non-visualizers in recall of former experience (*Jour. Philos., Psych. and Scientific Methods*, July, 1917). P. F. Swindle has made a study of the after images of the various senses (*Am. Jour. Psych.*, July, 1917). A. I. Gates has made a comparative study of memory, in which he finds that women excel in immediate and delayed memory, and that men excel women, but to a less degree, in reasoning (*Psych. Rev.*, March, 1917). Kate Gordon has made "Some Tests on the Memorizing of Musical Themes," and has found that it is easier to memorize musical selections than nonsense material, but that there is not so much difference as between significant and nonsense material (*Jour. Exper. Psych.*, April, 1917). E. C. Tolman finds, in contradiction to T. V. Moore, that meaning in thought depends upon mental imagery (*Psych. Rev.*, March, 1917). J. E. Downing and J. E. Anderson, studying "Retention of Skill after Lapse of Practice," state that after a lapse of more than two years there still remains considerable ability to maintain two simultaneous processes, *viz.*, reading and writing (*Am. Jour. Psych.*, July, 1917). A very practical problem in memory is that of J. J. B. Morgan on "The Effect of Sound Distraction upon Memory" (*ibid.*, April, 1917).

W. S. Hunter has applied the delayed-reaction method of examining behavior to human beings (*Psych. Rev.*, Jan., 1917). He makes the important conclusion that "a true language non-vocal in character appears phylogenetically and ontogenetically prior to vocal language." In their interesting work on "The Mental Work Curve" (*ibid.*, Sept., 1917) Daniel Starch and I. E. Ash found that slow workers made more mistakes than fast workers. Results which the author thinks may support the old innervation theory are contained in K. S. Lashley's article, "Accuracy of Movement in the Absence of Excitation from the Memory Organ" (*Am. Jour. Physiol.*, May, 1917). J. B. Watson and J. J. B. Morgan have written a theoretical paper, "Emotional Reaction and Psychological Experimentations" (*Am. Jour. Psych.*, April, 1917), in which they advocate investigation of the emotions upon behaviorist lines with emphasis upon educational and vocational fields. They desire to transfer emotions from situations where they are useless to where they may be of service. H. T. Moore in "Laboratory Tests of Anger, Fear and Sex Interest" (*ibid.*, July, 1917) describes some ingenious devices for producing these emotions.

In the field of the higher thought processes, S. C. Fisher has made "An Analysis of a Phase of the Process of Classifying" (*ibid.*, Jan., 1917), and E. L. Thorndike, in "The Psychology of Thinking in the Case of Reading" (*Psych. Rev.*, May, 1917), concludes that there exists no fundamental physiological contrast between fixed habit and reasoning. C. C. Brigham has published an extensive study of mental tests (*Psych. Monogr.*, xxiv, 1917). In an investigation upon "The Relation of Intelligence to Social Status" J. W. Bridges and L. E. Coler corroborate the results of other experimenters that intelligence is strongly dependent upon sociological conditions (*Psych. Rev.*, Jan., 1917).

Abnormal Psychology.—The work among the juvenile delinquents is becoming well established. W. Healy, who has been appointed psychologist to the Juvenile Court of Boston, has published a book containing the records of many cases entitled *Mental Conflict and Misconduct* (Little, Brown, 1917). A book of practical aspects and methods of investigation upon normal and abnormal people is A. Bronner's *The Psychology of Special Abilities and Disabilities* (*ibid.*). F. L. Wells in *Mental Adjustments* (Appletons, 1917) treats of symbolic associations, types of dissociation, etc. H. Woodrow has found that feeble-minded children show the same improvement with practice as normal children (*Jour. Educ. Psych.*, March, 1917).

Speech and sensory defects receive some attention. Smiley Blanton describes "An Unusual Case of Speech Inhibition" (*Jour. Abnor. Psych.*, Dec.-Jan., 1916-1917). N. J. Bond and W. F. Dearborn have found that the blind have better auditory memory and higher tactual sensibility than normal individuals (*Jour. Educ. Psych.*, March, 1917). R. Pintner and D. G. Patterson have made "A Comparison of Deaf and Hearing Children" (*Jour. Exper. Psych.*, Feb., 1917). C. F. Frazer's article on "Psychology of the Blind" (*Am. Jour. Psych.*, April, 1917) is interesting in relation to present problems of the reëducation of the soldier disabled in the war.

Wilfred Lay in *Man's Conscious Conflict* (Dodd, Mead, 1917) has made a popular exposition of psycho-analysis. James J. Putnam describes the effect of a strict old-fashioned religious training and of the New England conscience. ("Sketch for a Study of New England Character," *Jour. Abnor. Psych.*, June, 1917).

Animal Psychology.—In animal psychology the greatest amount of work seems to have been done upon the learning process with the maze. K. S. Lashley has discussed "The Criterion of Learning in Experiments with the Maze" (*Jour. Animal Behavior*, Jan.-Feb., 1917). H. Carr has found that the white rat becomes adapted to changes in its environment (*ibid.*, July-Aug., 1917). The learning process and habit formation and reactions have been investigated in a number of other ways. W. S. Hunter has made a careful analysis of the habit formation ("The Interference of Auditory Habits in a White Rat," *ibid.*, Jan.-Feb., 1917). R. M. Yerkes has described a useful instrument for reaction work, especially for his multiple choice (*ibid.*, Jan.-Feb., 1917). S. J. Holmes's *Studies in Animal Behavior* (Badger, 1916) is a positive contribution to the subject, clearly written and in a style to interest the general reader. E. L. Thompson has made an extensive study entitled "An Analysis of the Learning Process of the Snail, *Physa gyrina Say* (*Behavior Monogr.*, No. 3, 1917), in which she has found "much evidence of capacity for adaptation."

Applied Psychology.—That a *Journal of Applied Psychology* has been started is proof of the advance in the practical aspect of psychology. Several important papers have already appeared. J. W. Baird has described improvements in the New York telephone directory in legibility (March, 1917). J. M. Terman *et al.* have described "A Trial of Mental and Pedagogical Tests in a Civil Service Examination for Policemen and Firemen" (March, 1917). W. D. Scott has contributed "A Fourth Method of Checking Results in Vocational Selection" (March, 1917). Judging from "Psychological Tests for Stenographers and Typewriters" (Sept., 1917) H. W. Rodgers thinks that empirical vocational tests have much practical value.

A method of detecting false testimony that may prove of value is described by W. M. Marston in "Systolic Blood Pressure Symptoms of Deception" (*Jour. Exper. Psych.*, April, 1917). N. J. Melville has written a manual for mental examiners entitled *Standard Method of Testing Juvenile Mentality by the Binet-Simon Scale, etc.*" (Lippincott, 1917), and R. Pintner and D. G. Patterson have published *A Scale of Performance Tests* (Appletons, 1917), applicable to the deaf, the speech-defective, the foreign-born, etc.

Mental Hygiene, a new journal issued quarterly under the direction of the National Committee of Mental Hygiene, contains non-technical studies of mental matters in relation to life problems. A glance at the *Journal of Educational Psychology* for 1917 shows that the psychology of reading has been given much attention by leading psychologists. Spelling, practice and memory are also being largely investigated.

PHILOSOPHY

Ralph Barton Perry

General Philosophy.—The sixteenth annual meeting of the American Philosophical Association was held in New York City on Dec. 27 and 28, 1916. The central topic for discussion was the distinction between the physical and the mental. An attempt was made by means of a prearranged symposium to obtain a clarification of the issue, and a sharper definition of opposing views. Papers were read by M. R. Cohen, B. H. Bode ("The Meaning of the Psychical"), R. F. A. Hoernle ("Confessions of an Old Idealist"), W. Fite, J. B. Pratt ("Confessions of an Old Realist"), G. A. de Laguna ("The Limits of the Physical"), W. M. Urban ("Meaning in Modern Psychology and the Problem of the Existence of the Psychical"), D. Drake ("An Unlisted Definition of the Psychical"), and H. G. Hartman ("A Definition of Dualistic Entities"). The most important event on the programme, however, was the presidential address, "On Some Conditions of Progress in Philosophical Inquiry," delivered by A. O. Lovejoy. The speaker advocated what he called "precautionary technique" in philosophy for the purpose of avoiding old errors. A properly methodical philosophy will take a wide and circumspect view of its problems, as against "single insights" and "happy thoughts." It will analyze its problems and, so far as possible, isolate them. It will attempt to bring about closer and more systematic coöperation among philosophical inquirers, and to this end will seek to adopt a common and unambiguous terminology. Professor Lovejoy made the interesting suggestion that present-day philosophers should formulate a definite set of problems, together with the "considerations" germane to them and the leading alternative doctrines, something after the manner of the *Summa* of Thomas Aquinas. This address proved to be very provocative of discussion. In the May number of the *Philosophical Review*, opinions were published by E. H. Hollands, E. Albee, T. de Laguna, W. E. Hocking and C. M. Bakewell, in part favorable, but bringing numerous objections to the plan and policy proposed by Professor Lovejoy. To these objections Professor Lovejoy published a very convincing reply in the July number of the same periodical. The same issue has arisen in connection with the preparation of the programme for the next meeting of the Association. There is a group of philosophers who desire to organize philosophical research, to obtain a better mutual understanding and a squarer meeting of minds; while there is another group, headed by C. E. Creighton, who are satisfied with philosophical procedure as it is, "who believe in a less formally defined mode of coöperation, and who perhaps attach more importance to viewing contemporary problems in the light of the great historical systems."

With its January number of 1917 the *Philosophical Review* entered upon the second quarter-century of its existence. The editor, Professor C. E. Creighton, announced that its policy was "to maintain and strengthen the spirit of science and of free inquiry," and called attention to the special importance of such a policy during and after the war. The anniversary number contained several notable articles. B. Bosanquet, the most distinguished English idealist after Bradley, contributed an article on "Realism and Metaphysic," in which he welcomes realism as the "left" of the metaphysical movement which is superseding in England both the traditional empiricism and the post-Kantian philosophy transplanted from Germany. An article by G. H. Sabine, entitled "Philosophical and Scientific Specialization," discusses the passing of the doctrine of psycho-physical parallelism, which the author regards as a confirmation of the claims of idealism.

Without doubt the most important American philosophical book of the year is *Creative Intelligence*, a coöperative volume representing the "instrumentalist" school headed by John Dewey. In the opening essay, Professor Dewey sounds the keynote of the book. He proposes a "Recovery of Philosophy," an attempt "to forward the emancipation of philosophy from too intimate and exclusive attachment to traditional problems." He states that "the pragmatic theory of intelligence means that the function of mind is to project new and more complex ends—to free experience from routine and from caprice." This emphasis on the function of creating ideals rather than supplying needs already felt, appears in the three essays on value at the close of the volume ("The Phases of the Economic Interest," by H. W. Stuart; "The Moral Life and the Construction of Values and Standards," by J. H. Tufts; and "Value and Existence," by H. M. Kallen). A fifth essay, by B. H. Bode, deals with "Consciousness and Psychology," while the remaining three deal with various aspects of logic and methodology ("Reformation of Logic," by A. W. Moore; "Intelligence and Mathematics," by H. C. Brown; and "Scientific Method and the Individual Thinker," by G. H. Mead).

The Order of Nature, by L. J. Henderson, is a sequel to the author's *Fitness of the Environment*. It contains an excellent historical *resumé* of teleological theories, and a restatement of evolution and adaptability in physico-chemical terms. DeWitt H. Parker's *The Self and Nature* is a clearly written and acute treatment of the fundamental problems of metaphysics, and especially of the problem of relations.

Mind for July contains an able article "On the Nature of Memory Knowledge," by J. B. Baillie. The author affirms the independent importance and validity of this type of knowledge, as distinguished from knowledge of the present. "Two Types of Idealism" by J. E. Creighton (*Philos. Rev.*, Sept., 1917) distinguishes between mentalism, panpsychism, or the "existential idealism" of Berkeley, and objective or "speculative" idealism, which treats reality as a concrete unified system of relations and values. Thus Professor Creighton unites with Professor Bosanquet both in defining idealism as the distinctively metaphysical philosophy, which takes reality as the completion or systematic unity of experience, and also in repudiating the subjectivistic philosophy. The influence of Professor Creighton upon the younger generation of philosophers in America is attested by a volume entitled *Philosophical Essays in Honor of James Edwin Creighton*, written by his pupils to commemorate the twenty-fifth anniversary of his appointment as professor of philosophy in Cornell University.

Ethics.—As was to be expected, the ethical studies of the year deal largely with the problems of the war. The *International Journal of Ethics* devotes its October number entirely to "War Problems." In a paper entitled "Social Psychology and the Problem of a Higher Nationality," H. C. Brown points out the need of a psychological study of the criminal and pathological propensities of nations, since these will constitute a practical problem for an international authority as such propensities in the individual do for the state. V. S. Yarros ("German and Anglo-American Views of the State") contends that the important question is not regarding the supremacy of the state but who shall speak for the state. Prof. Emile Boutroux, the distinguished French philosopher, writes on "Liberty of Conscience"—on the need of avoiding a clash between authority and conscience by tolerance and by a recognition of that modicum of truth which is present whenever conscience speaks.

Two important books dealing with the fundamental issues of social and political philosophy have recently appeared in England. In his *Principles of Social Reconstruction* Bertrand Russell takes as his point of departure the importance of irrational motives in human conduct. "Impulse has more effect than conscious purpose in moulding men's lives." The important thing is that the "creative" impulses that tend to peace should be developed rather than the "possessive" impulses which divide men. The state owes its excessive power to the fear of war, external and internal. This power should be reduced by removing the occasions for external war and by reducing the blind worship of law. B. Bosanquet's *Social and International Ideals* agrees with Mr. Russell in emphasizing the creative or cultural and non-militant motives in human conduct. But Professor Bosanquet attaches an altogether different and much greater *rôle* to nationality. Peace is to be secured, if at all, not by reducing the importance of the state, or by replacing the national by an international authority, but by perfecting the national life itself. "The healthy State, however strong, is non-militant in temper."

Volume ix of the *Encyclopedia of Religion and Ethics*, edited by J. Hastings, contains several important articles, including one on "Personality" by J. E. McTaggart and articles on "Negation" and "Order" by the late Professor Royce. An interesting summary of "Ethics in the Last Twenty-five Years" by J. H. Tufts appeared in the *Philosophical Review* for January. A. K. Rogers continues his series of studies in the psychological aspects of ethics with a paper entitled "The Nature of Oughtness" (*Philos. Rev.*, March, 1917). The theory of value continues to be a favorite topic of investigation, owing chiefly to the work of W. M. Urban. This writer discusses the "Ontological Problem of Value" in the *Journal of Philosophy* for June 7. He contends that "value-objectives" are ultimates of a peculiar and irreducible sort, and that in the last analysis reality itself is a form of value.

Logic.—The importance of the work of the late Charles Peirce is coming to be more and more clearly recognized. He was a genuine pioneer and originator in a method of logical study that has revolutionized the subject. The *Journal of Philosophy* for Dec. 21, 1916, was devoted to a series of papers dealing with various aspects of Peirce's work, the first, on his philosophy, having been prepared by Royce shortly before his death. An account of the valuable unpublished manuscripts now the property of Harvard University was contributed by F. Kernan. The other papers were as follows: "The Pragmatism of Peirce," by John Dewey; "Charles S. Peirce at the Johns Hopkins," by C. Ladd-Franklin; "Charles S. Peirce as a Teacher," by Joseph Jastrow; "Charles S. Peirce and a Tentative Bibliography of his Writings," by M. R. Cohen. *Mind*, during the year, has contained a number of short articles and discussions on the nature and limits of formal logic, and also an interesting paper by R. Demos on "A Discussion of a Certain Type of Negative Proposition," in which the author proposes to convert the negative proposition "not—*p*" into the positive proposition "an opposite of *p* is true."

History of Philosophy.—W. T. Marvin has written a *History of European Philosophy* which is original in its method and scope. It is not an account of philosophers and their doctrines, but rather of the development of thought in relation to epochs of civilization and with special reference to science. Hugh Elliot has produced an excellent book on *Herbert Spencer*, and H. Haldar has written a scholarly discussion of "Leibniz and German Idealism" (*Philos. Rev.*, July, 1917). But undoubtedly the book of the year in the historical field is G. Santayana's *Egotism in German Philosophy*. Like all attempts to reduce the thought of a nation to a formula this book is one-sided and the argument is often strained. But on the whole the formula fits well. There are "hints of egotism in Goethe," "seeds of egotism in Kant," egotism perfected in Fichte, Hegel and Nietzsche, egotism in theory, and "egotism in practice." Egotism in the case of Germany is further aggravated by Protestantism and heathenism. The theme affords an opportunity for the play of wit and brilliancy of style which distinguish this writer.

Philosophy of Religion.—J. H. Leuba's *The Belief in God and Immortality, a Psychological, Anthropological and Statistical Study*, distinguishes between the primary belief, founded on supposed fact and often accepted with regret, and the modern belief, founded on desire. The book also contains a statistical summary of the beliefs of certain classes of men in American life. These statistics have been severely criticised on the ground that the objects of the beliefs in question were too ill-defined to assure any uniformity in the understanding of the questionnaire by which the census was made. In his *Problems of Religion* D. Drake has produced a useful textbook on the subject. A. Seth Pringle-Pattison's *The Idea of God* is a defense of theism in the light of current philosophical tendencies

XXVII. RELIGION AND RELIGIOUS ORGANIZATIONS

CHRISTIAN CHURCHES

H. K. Carroll

BAPTIST

Northern Baptist Convention.—The great denominational convention of the Northern Baptists gathering annually for the review and direction of general denominational activities, was held in Cleveland in May. All its proceedings were under the shadow of the great war in which the United States had just become involved. Loyalty to the nation and the nation's cause was evidenced at every session from the first, at which 1,700 registered. National prohibition as a war measure and extension of the sanitary zone around training camps were among the earliest recommendations of the Convention, and strong war resolutions were adopted. Reports showed that 12 foreign-speaking societies, representing as many groups of churches, had raised $68,000 for educational and missionary purposes in this country. The Convention voted to keep the apportionment for the four missionary societies, two foreign and two home, at the same figure as in 1916, *viz.*, $1,583,752, and ask the churches to advance voluntarily 15 per cent. thereon. This sum was supplemented by $1,167,051 in special gifts in 1916-17, and the same amount is expected during the current year. The income during the year reported on had increased by $85,530. The subject of ministerial pensions was considered, and it was reported that the permanent fund is now $797,000, which it is the purpose to increase to $2,000,000. George W. Coleman was elected president for the ensuing year. The Convention's War Commission appealed to the churches for $150,000 for work at the cantonments.

Southern Baptist Convention.—The annual session of the Southern Baptist Convention, representing the largest body of Baptists in the world, approximating 2,750,000, was held in New Orleans in May. Rev. J. B. Gambrell was elected moderator, in succession to Dr. Lansing Burrows, who had served for two years. The prolonged agitation for the consolidation of the Home and Foreign Mission Boards of the denomination was settled by a decisive vote not to disturb the present relations of the Boards, but to continue them as separate organizations. A committee was appointed to serve as an advisory committee to these societies. The matter of an adequate provision for the pensioning of aged and disabled ministers was considered and a committee was appointed to devise a plan. A permanent fund of $4,000,000 is in contemplation. The income of the various boards was large and encouraging. The next convention will be held in Hot Springs, Ark. The Northern and Southern Conventions united in an address to the Baptists of Great Britain, in response to a communication from the latter, declaring their support of the war to make the world "safe for democracy."

CONGREGATIONAL

National Congregational Council.—The National Congregational Council, the representative body of Congregationalism in the United States, held its biennial session in Columbus, Ohio, in October. Rev. William Howard Day, D.D., of California, was unanimously elected moderator, succeeding Henry M. Beardsley, who had served for the preceding biennium. The Council gave much time to questions growing out of the war, creating a National Service Commission to supervise church efforts for war service, particularly in army cantonments, through local or neighboring churches of the denomination. For this purpose a fund of $100,000 is to be raised. The Council enlarged the scope of the ministerial-annuity plan (provision for retired and disabled ministers), appointed a committee of 117 for the purpose, and decided to ask for $15,000,000 for the permanent fund. The consolidation of the *Advance* with the *Congregationalist*, was directed, and readjustment and reorganization of the Education and Sunday School Societies were approved. By a series of resolutions the Council put itself fully behind President Wilson in his war administration. Further, it endorsed woman suffrage, approved of the Pilgrim stewardship covenant as an aid to the apportionment plan, expressed its sympathy with the German-American churches, of which there are a number in the Congregational fellowship, and appointed President Blaisdell of Pomona College as a fraternal delegate to the Kumiai churches (Congregational) of Japan. Addresses were delivered appropriate to the Luther Quadricentenary and the Pilgrim Tercentenary. All the denominational causes were reported as prosperous, the income for missions having increased instead of diminished under the stress of war conditions. Attention was called to the decrease in the number of students in the denominational theological seminaries, and President Ozora S. Davis of the Chicago Seminary characterized the situation as the most critical for Congregational ministerial supply since the Civil War. Pastors were urged to press the claims of the ministry upon the young men of their churches. The tercentenary plan of campaign — seeking new members, adding to the ministerial force, raising a memorial fund, and education of the young in Pilgrim principles and history, has, it was reported, been well started.

LUTHERAN

Lutheran Union.—Two great events stirred American Lutheranism most profoundly in 1917, the celebration of the four hundredth anniversary of the beginning of the Protestant Reformation by Martin Luther and the prosecution of projects of unification. There were two unification projects, the first, for the union of three Norwegian Lutheran synods, the Norwegian, the United Norwegian, and Hauge's Synods (*A. Y. B.*, 1916, p. 716), and the second, for the union of the General Synod, the United Synod, South, and the General Council. The former movement was conducted to a successful issue, the difficulties having been overcome one by one, and the new body was organized at St. Paul in June. The delegates of each synod marched to their seats in the auditorium, bearing the American flag, those of Hauge's Synod leading the procession. Then the delegates rose and sang the Doxology, after which the proceedings were opened with worship conducted by the presidents of the three synods. Addresses by the governor of the state and the mayor of the city were delivered, and the business of the first session of the Norwegian Lutheran Church of America was begun. The three bodies thus united embrace all the Norwegian synods except one, and have 294,000 communicants, 2,926 churches and 1,257 ministers. The Norwegian Free Synod, which is not in the union, has about 23,000 communicants.

The second great union enterprise, which was not even mentioned until April, 1917, was the merging of the General Synod, the United Synod, South, and the General Council, the greatest event in the Lutheran communion in half a century. To indicate its significance it is necessary to explain that the Lutheran communion in the United States has been very much divided. Though all the synodical bodies accept the Lutheran doctrinal symbols, and are, therefore, one in faith, they have maintained four distinct and separate general bodies and 15 or 16 independent synods, that is, district synods, which have no connection with one another. Most of these bodies fellowship one another, but those of the Synodical Conference, the largest of the general bodies, do not admit Lutheran ministers of other bodies to their pulpits. Of the general bodies, the General Synod is the oldest, having been organized in 1820, as the outcome of the celebration in 1817 of the tercentenary of the Reformation. The second general body, in point of time, was the United Synod, South, whose organization was due to the isolation caused by the Civil War. The General Council was organized in 1866 by the ministerium of Pennsylvania and other synods not in sympathy with the liberal confessional attitude of the General Synod and its participation in the revival movement of the period. In the course of the years since this division, the General Synod and the General Council have gradually approached the same confessional view. The adoption of a common service a few years ago has tended to unify the practice and feeling, and prepare the way for reunion.

The unification project first found expression in the Lutheran Quadricentenary Commission, composed of representatives of the three bodies. In April the Commission made the suggestion that this was a good time, when Lutherans were celebrating the four hundredth anniversary of Luther's Reformation, to get together, and proposed that the three bodies set the example for other Lutheran organizations and form a United Lutheran Church of America. The presidents of the three general organizations were members of the Quadricentenary Commission, and they ventured to appoint a joint committee, of which they were members, to prepare a constitution for the proposed union. This committee, working heartily together, soon agreed upon a draft, which was published for general consideration.

The General Synod was the first to meet. At its biennial session in Chicago in June, the proposed constitution was most favorably received; and after brief consideration it was approved by a unanimous vote, and provision was made for submitting it to the district synods for their action. Its adoption was recommended, and it was provided that if at least two-thirds of the district synods of the three bodies approve the constitution, an adjourned meeting of the General Synod shall be held on the second Tuesday of November, 1918, after which it shall dissolve and be merged in the United Lutheran Church of America, the first convention of which shall then begin. The adoption of this programme without a single dissenting vote was accompanied by the most profound feeling. The biennial session of the General Council came next. It met in Philadelphia late in October, and resolutions practically identical with those adopted by the General Synod were presented by President Schmauk. Before they were considered, a report of the committee appointed in 1915 (*A. Y. B.*, 1915, p. 717) to revise the Council's constitution was presented, stating that the revision had been arrested by the proposed consolidation and recommending the adoption of the constitution prepared for the united body. After addresses by President Tressler of the General Synod, President Scherer, of the United Synod, South, the president of the General Council, and many others, all enthusiastic for union, the resolutions were adopted unanimously. The action of the United Synod, South, was taken at its biennial session at Salisbury, N. C., early in November, and that, too, was unanimous. Hence, so far as the general bodies are concerned, the plan for union has been conceived, formulated, presented, and carried unanimously in the space of seven months, an occurrence probably without a precedent.

The three bodies when united are to be known as the United Lutheran Church of America. It will have 933,342 communicants, or 1,343,000 baptized members, nearly 5,000 churches, and 3,500 ministers. The district synods, 46 in number, are expected to ratify the constitution with little or no dissent. When the union takes place, the number of separate Lutheran bodies will have been reduced from 20 to 16. Union will involve consolidation of the various missionary and benevolent societies of the three bodies and of their publication boards and a readjustment of educational institutions. It is hoped that the Ohio Synod, a large independent body formerly holding relations with the General Council, will eventually come into the united body, with other synods.

The Luther Quadricentenary. — Great preparations had been made for the observance of the Lutheran Quadricentenary by all organizations bearing the Lutheran name. A committee of representatives of the General Synod, the General Council and the United Synod, South, was constituted in 1916 to have this matter in charge (*A. Y. B.*, 1916, p. 717). The motto proposed for the year of celebration was observance of the reformation of the sixteenth century and the transformation of the twentieth century. The goal of endeavour set was 500,000 new members for Lutheran churches, 100 per cent. increase in confirmations, 50 per cent. increase in Sunday-School scholars, the establishment of a missionary society in every church, and $10,000,000 for missions, education and ministerial relief. The Federal Council of the Churches of Christ also had a committee of celebration, representing denominations of the evangelical type. The last Sunday in October was set apart as Reformation Day, and in many thousands of Protestant churches sermons were preached on the character and work of Luther and the results of the Reformation.

The General Synod.—The General Synod, at its biennial session in Chicago in June, elected Dr. V. G. A. Tressler of Springfield, Ohio, as president, in succession to Dr. Singmaster. The action of the Synod on union has been described above. It was outspoken in support of the war and took measures to meet the conditions involved in the spiritual care of soldiers in cantonments.

The General Council.—The biennial session of the General Council, under the presidency of Dr. Schmauk, was held in Philadelphia the latter part of October. In addition to its action on union, described above, it approved the appointment in October of a Lutheran War Commission, representing several bodies, and authorized the raising of $150,000, the share of the General Council of the necessary expenses of the care of soldiers in cantonments. It was reported that arrangements had been made with representatives of the Danish Lutheran churches in the Virgin islands, recently conveyed to the United States by Denmark (see VII, *Territories and Dependencies*), to take them under the care of the General Council; the Council ratified this covenant and voted to assume the responsibility.

The Language Question in the Missouri Synod.—The Missouri Synod is the largest, the strictest confessionally, and the most foreign-speaking Lutheran body in America. Until quite recently the German language prevailed almost exclusively in its churches. The Synod recognizes the fact that it is "rapidly passing through the transition from German to English," and has adopted a resolution declaring that in view "of the certainty that the next ten or fifteen years will see tremendous, even revolutionary, changes in language, demanding a thorough equipment in English of all our ministerial students," it is the part of wisdom to prepare to meet the new conditions. It has appointed a committee to make a complete survey and present a report at the next meeting of the synod, showing what measures are necessary to satisfy the requirements.

METHODIST

The Union Movement.—The proposed union of the Methodist Episcopal Church and the Methodist Episcopal Church, South, has made some progress since the enthusiastic scene at the General Conference at Saratoga, in May, 1916 (*A. Y. B.*, 1916, p. 718). The Joint Commission on Unification of the two Churches, that of the northern body, 25 in number, having been newly appointed, met in Baltimore on Dec. 28, 1916. Each section organized separately, the southern with Bishop Candler as chairman, and the northern, with Bishop Cranston as chairman. In joint sessions the two chairmen presided alternately. After considering the questions involved, the Joint Commission adjourned, issuing an official statement to the effect that it had been agreed that there were three vital issues: (1) the general conference and its powers, (2) the number and powers of the jurisdictional conferences, and (3) the status of the colored members. It had not been possible to reach final conclusions on all these points. The Joint Commission met again at Traverse City, Mich., on July 3. The result, as officially stated, was the solution of some of the difficulties and "substantial and reassuring" progress. Conclusions on seven points were tentatively accepted: (1) the church conference, (2) the quarterly conference, (3) the annual conference, (4) the composition and powers of the regional (jurisdictional) conferences, (5) the area, boundaries and powers of the missionary regional conferences, (6) the powers of the general conference and its composition, and (7) the election, assignment and retirement of bishops and their privileges, powers and duties. These conclusions may be changed at a future meeting. It was commonly reported that the question for which no solution was in sight was that of the relation of the colored members of the Methodist Episcopal Church, upward of 340,000 in number, to the union. The southern commissioners do not wish to have them as an integral part of the proposed union, namely, as one of the regional conferences, in which case they would be entitled to sit in the general conference. Two other questions yet to be decided are the number and boundaries of the regional conferences and the composition and authority of the proposed supreme judicial council. The next session of the Commission is to be held at Savannah, Ga., on Jan. 23, 1918. Doubtless an effort will then be made to reach a definite conclusion on some of the points at issue, if not upon all, so that report may be made to the Southern General Conference, which meets at Atlanta, Ga., in the following May (see *infra*).

For many years a project for the union of the Methodist Protestant and the United Brethren Churches has been under consideration. At the General Conference of the latter body, held in May, the matter came up again. It appeared that the difficulties are very serious, if not insuperable, owing to differences between the two denominations, and it was thought best that the agitation for union should cease for the present. Nevertheless, it was decided to appoint a committee to consider the project further, if desirable, and to receive any other proposition that may be proposed.

The long pending negotiations for the union of the Methodist, Presbyterian and Congregational denominations in Canada are, by common consent, not to be renewed until after the war is over.

War Emergency Commission.—The Board of Home Missions and Church Extension created a War Emergency Commission for the Methodist Episcopal Church and asked the Church for $250,000 for the care of the soldiers in camps and cantonments. The Commission announced its purpose to coöperate with other Protestant bodies to keep in touch with volunteer chaplains, both Protestant and Roman Catholic, so that "programmes inside and outside the camps may be developed harmoniously." The Commission proposes to furnish the 60 Methodist chaplains to be appointed by the Government with full equipment for their work. The Board of Bishops, at their semi-annual meeting at Atlantic City in October, issued an address on the relation of the Methodist Church to the world issue, in which the opinion is expressed that "the fate of civilization hinges largely upon the outcome of the present war." The bishops rejoice in the manifest determination of the country to keep the struggle on the high plane of the rights of small nations, the making of the world safe for democracy, and the exaltation of human rights above all other rights whatsoever, and call to prayer for the divine blessing upon our soldiers and sailors, our nurses, and all to whom the war brings responsibility or suffering.

Negro Exodus from the South.—The Board of Home Missions of the Methodist Episcopal Church issued early in the year an urgent call for contributions to care for the Negroes crowding into northern cities from the South. It is estimated that half a million have already migrated, of whom 75,000 have settled in Chicago, 40,000 in Philadelphia, and 25,000 in Detroit, while multitudes have scattered among smaller communities. Religious care of these emigrants is declared to be greatly needed.

The General Conference of Southern Methodism.—The quadrennial session of the General Conference of the Methodist Episcopal Church, South, will be held in May, 1918, at Atlanta, Ga. Further action is expected on the question of union with the Methodist Episcopal Church, on the report of the Joint Commission on Unification (see *supra*). During the year an address to the preachers and laymen of the Church, issued by 186 laymen, proposing certain reforms in the constitution and discipline of the Church, has attracted much attention and excited some discussion, of which a part was quite acrimonious. The address sets forth three objects to be secured: (1) more democracy in the government of the Church, (2) limitation of the authority of the episcopacy, and (3) a clearer definition of the relation of the bishops of the Church to the General Conference boards. The proponents of this programme are charged with disloyalty by some of the church papers and their propositions are characterized as revolutionary.

A Great Fund-Raising Year.—The Methodist Episcopal Church made very heavy demands upon its people in 1917. The appeal for many millions for a ministerial-relief endowment fund went forward with large results, and the goal of $15,000,000 is said to have been reached. There have been campaigns also for the endowment of the various educational institutions, in which $20,000,000 has been raised. The Board of Bishops at their October meeting launched a plan for the raising of $80,000,000 for missionary purposes, and this project was accepted by the Home and Foreign Missionary Boards at a joint meeting in Philadelphia in November. The proposition is that the $75,000,000 be raised in five annual installments of $15,000,000. Of the whole amount $40,000,000 is to be used for home and $35,000,000 for foreign work, so that Methodism may be "spread to every quarter of the globe." The income of the Home and Foreign Missionary Boards for 1917 was very large, exceeding $5,500,000, of which $3,136,062 was for foreign missions. Of this latter amount, $1,175,758 was raised by the Woman's Foreign Missionary Society, indicating a gain of $93,169 for the year. The Woman's Home Missionary Society announced a like increase. The Sunday schools alone contributed $118,000 to the Red Cross.

Proposed Return of the Wesleyans to the Church of England.—The Wesleyan Methodist Church of England, although one of the federated Free Churches of England, is considered by some Methodists and many Churchmen to be a little nearer to the church of the Wesleys than to any of the other dissenting churches. The return of the Wesleyans to the Establishment was much discussed during the year in the Anglican press, which, though very much desiring that outcome, recognized two serious obstacles, the lack of ministerial orders on the part of the Methodists and the necessity of confirmation. A number of Methodist ministers discussed the matter in conference with the Bishop of London, and the Bishops of London and Chelmsford visited the Wesleyan Conference at its annual session in July, conveyed their good wishes, and were courteously received. The Bishop of London expressed the earnest desire for the union of English Christianity, but said he would cut off his right hand sooner than extinguish Methodism by merging it with the Church of England. He would like, he said, to find a way to use the fiery zeal and missionary passion of the Wesleyan Methodists in the Anglican Church. A courteous response was made to the speeches of the visiting bishops by the president of the conference, but no action was taken. The Wesleyans are said to be more anxious for union with other Methodist bodies in England than with either the Church of England or the Free Churches.

PRESBYTERIAN

Reunion of the Northern and Southern Presbyterian Churches.—It has long been the desire of many ministers and members of the Northern Presbyterian Church and of fewer of the Southern Church to see the two Churches, forced apart by the circumstances of the Civil War, one again. At the meeting of the General Assembly of the Northern Church at Dallas, Tex., in May, it was decided to appoint a committee of conference on union, and a telegram to that effect was sent to the Southern Assembly in session at Birmingham, Ala. The communication was referred by the Southern Assembly to a committee of 17, from which two reports were received. One, signed by 14 members, recommended that the Assembly decline to appoint such a committee as the telegram asked for, on the ground that there is no demand for union in the Southern Church, that the Northern Church has not observed its agreement as to comity, and that the New York Presbytery persists in ordaining men to the ministry who are alleged to be unsound in doctrine. The minority report, signed by three, asserted that there was a demand in the Southern Church for closer relations, that a conference on the subject could do no harm, and that to decline would be a mistake and would have an unfortunate effect, particularly in the border states. After discussion a substitute resolution was offered and adopted, declaring that while the Assembly did not regard union as practicable at this time, yet it acceded to the request that a committee of conference be appointed, and recommended that it take under consideration the question of federation of all Presbyterian bodies in this country. The feeling of reluctance on the part of the Southern Church to enter into negotiations for union is said to be due, first, to the ordination of men in the Northern Church understood to be unsound in doctrine, and second, to a stricter regard for the principle of separation of Church and State than prevails in the Northern body.

Dr. J. Wilbur Chapman was elected moderator of the Northern Assembly, which appointed a large National Service Committee to deal with matters connected with the war, particularly to care for soldiers in camps and cantonments. An address to President Wilson assured him of the Assembly's sympathy and prayers and the support of the whole Church, in which the President is a ruling elder. The Presbyterian Board of Education has advised all ministerial students in its institutions to waive exemption from military service based upon their standing as ministerial candidates.

PROTESTANT EPISCOPAL

War Commissions.—The most notable work of the Protestant Episcopal Church in 1917 was that in connection with war activities. When war was declared there were two commissions of the Church relating to the army and navy, one, the commission on the appointment of chaplains, of which the Bishop of Washington is chairman, the other, the commission on the increase of chaplains and their equipment, of which the Bishop of Massachusetts is chairman. Both of these commissions had already taken an active interest in these matters. In August the Presiding Bishop, in a letter to the Bishop of Massachusetts, appointed a special War Commission, assigning as its duty the "watchful care and direction of Church work in connection with camps and cantonments, battlefields and hospitals, army and navy chaplains, and like matters." This Commission organized in the early fall and entered at once upon its duties. The Bishop of Western Michigan, Dr. McCormick, was sent to the front in France as representative of the Commission, while the Bishop of Erie, Dr. Israel, who for some months had been engaged in work in France, was also brought in touch with the activities of the Commission. It was determined that a war fund of $500,000 should be collected for the expenses of church work in war areas.

Various organizations in the Church had similarly assumed responsibilities before the appointment of the War Commission. Chief of these was the Brotherhood of St. Andrew, which appointed a war council of 15, including bishops, clergy and laity, to care for churchmen in army and navy, working in cantonments through special representatives wherever possible. Arrangements were made whereby these representatives should generally act in conjunction with the Y. M. C. A. (see *infra*). The Girls' Friendly Society similarly has taken steps to protect girls and young women in the vicinity of army camps and cantonments, and had also financed a work in England among girl munition workers and among French wounded. The General Board of Religious Education has issued a programme of patriotic service and has appealed to church students in behalf of patriotism. The Church Periodical Club has extended its services to all chaplains and has taken steps to provide slides, service books, and whatever other equipment may be required, including much reading matter. The St. Barnabas Guild for Nurses had organized nurses in service and thrown its fostering care about them.

Missionary Income.—On the side of missionary work the chief feature of the fiscal year ending Oct. 31, 1917, was that approximately $120,000 had been raised through the "one-day's income plan," which has been successful in supplementing the income raised by the apportionment plan. In the Woman's Auxiliary to the Board of Missions, Miss Julia C. Emery has retired from the office of general secretary, which she had filled for a long term of years, and has been succeeded by Miss M. G. Lindley.

Changes Among the Bishops.—Bishops who have died during the year are Samuel Cook of Minnesota, Cleland K. Nelson of Atlanta, James H. Van Buren, retired, of Porto Rico, and William D. Walker of Western New York. New bishops are Dr. Henry J. Mikell, as Bishop of Atlanta, Dr. Edwin W. Saphore, as Suffragan Bishop of Arkansas, Dr. Granville H. Sherwood, as Bishop of Springfield, and Dr. Frank H. Touret, as Missionary Bishop of Western Colorado. Bishop McElwain, suffragan of Minnesota, becomes bishop of that diocese, while Dr. W. R. Stearly is changed from suffragan bishop of Newark to bishop coadjutor, and Dr. H. S. Longley, Suffragan Bishop of Iowa, becomes coadjutor bishop of the same diocese. Three bishops-elect are awaiting consecration: Rev. John G. Sage as Missionary Bishop of Salina, Rev. Wm. P. Remington as Suffragan Bishop of South Dakota, and Rev. Robert LeRoy Harris as Coadjutor Bishop of Marquette.

Retired Clergy Pension Fund.—The effort, begun in 1916 under the leadership of the Bishop of Massachusetts, to raise $5,000,000 for pensions to retired and disabled clergymen was carried to high success in 1917, the amount finally exceeding $6,500,000.

The Faith and Order Commission.—The commission on the proposed World Conference on Faith and Order (*A. Y. B.*, 1914, p. 716) has not been able to carry forward plans for the reunion of Christendom because of the prevalence of war conditions everywhere. As soon as the war is over formal invitations will be issued to the Roman Catholic Church, the Russian Orthodox and Greek Churches, and the Protestant churches of Europe. Correspondence has proceeded with prominent personages, including the Pope at Rome, who has promised his prayers. As the Protestant churches of North America have generally accepted the proposition to participate in the proposed conference, a North American preparation committee has been appointed, of which Bishop Anderson of Chicago is chairman. The Commission has asked all to unite in prayer for the success of the cause in the period Jan. 18-25, 1918.

ROMAN CATHOLIC

American Catholic Federation.—The convention of the various national Roman Catholic societies, numbering 30 or more, including the Knights of Columbus, was held in Kansas City in August. The keynote of the convention was: "To think as the Church thinks, to feel as the Church feels, and to speak as the Church speaks." The war and the duty of the Church to the Catholic soldiers in battle, in camp, in barracks, in tent and in cantonment, social service, and the promotion of a higher morality in all communities were among the subjects discussed and acted upon. The Federation is set for a crusade against all forms of immorality, and is particularly active against indecent pictures, including "movies," indecent dress and immoral publications. It points to the prevalence of divorce as a great evil, which the Church cannot countenance or excuse. The convention approved the action of the archbishops and bishops who in the early summer created in Washington a National Catholic War Commission for temporary service in reaching and caring for the 400,000 or more Catholic young men in the army and navy. Not only must the Church furnish 35 per cent. of the chaplains needed in the army, but it must appoint priests for the spiritual care of men in the cantonments who have no chaplain of the Catholic faith, and it must also provide wholesome recreation and amusement. The Knights of Columbus have been recognized for social work among men under the colors, performing for Catholics the kind of work the Y. M. C. A. does for Protestants and others. It was reported to the convention that a Catholic Y. M. C. A. is being organized from various existing societies, and the convention approved the project. A long series of resolutions were adopted relating to the Pope's peace proposal (see II, *International Relations*); promotion of the welfare of soldiers; welcoming the Holy Name Society to the Federation; declaring that the parent, not the state, has the right to direct and control the education of the child, and holding up as an ideal "every Catholic child in a Catholic school"; stating the principles upon which social service should proceed; opposing the "anarchy of irresponsible wealth, and the anarchy of irresponsible labor"; pronouncing against Sunday desecration, mob violence against the Negroes, and all pictures, prints, plays, etc., which tend to belittle the institution of marriage.

The Knights of Columbus War Fund.—The Supreme Council of the Knights of Columbus having determined to raise a war fund of a million dollars, the Knights organized, council by council, and by thorough team work speedily realized that sum and much more. The fund is to be used "to further the spiritual, material, intellectual, social and physical welfare of the men in the army and navy, with particular attention paid to, the needs of those who go to the cantonments of the new army." Hospital units, ambulances, huts, motor trucks, motor cycles, etc., will be furnished and special chaplains provided.

New Code of Canon Law.—Of importance to Catholics in the United States, as well as to Catholics of other nations, was the new code of canon law published from the Vatican during the year.

Growth of the Church.—The Roman Catholic population of the United States at the end of 1916 was 17,022,879, which is estimated to represent 14,469,447 communicants, on the basis of 15 per cent. allowed for infants and non-communicants. The War Department reckons on the basis of 20 per cent. in the apportionment of chaplains; this would yield 13,618,303 communicants. There are 14 archbishops, of whom three are cardinals, 96 bishops, 19,983 clergy, and 15,520 churches and missions. The number of parochial day schools is 5,687, with 1,537,644 pupils.

THE Y. M. C. A.

War Services.—The war has caused the activities of the Y. M. C. A. to be greatly broadened and increased. Its service is welcomed and appreciated by the armies of the nations at war, in the field, in cantonments, in prisoners' camps and elsewhere. When the United States entered the war in April, the Association leaders called for $3,000,000 to provide Association service among the enlisted men in America for the summer of 1917, and the public responded to this appeal with $5,000,000. As a result, regular Association work up to the end of October was being carried on in 186 camps and 245 other places among enlisted men; 265 buildings had been erected, and 111 new buildings authorized; 987 secretaries were at work and 1,181 more were to be assigned during the next three months for the National Guard camps and

National Army cantonments. In addition, about 200 secretaries were already at work among American troops overseas, and this number was steadily increasing from week to week. So satisfactory was this work for enlisted men in the army and navy, and so rapidly were its demands expanded to meet the great need, that the great War Council of the Y. M. C. A. called for $35,000,000 to provide for this service for the nine months from October, 1917, to July, 1918, as follows: for enlisted men in the United States, $11,120,000; for United States enlisted men overseas, $11,994,000; for Y. M. C. A. work in the Russian army, $3,305,000, in the French army, $2,649,000, and in the Italian army, $1,000,000; for prisoners of war on both sides of the conflict, $1,000,000; for inevitable expansion, $3,932,000. A campaign of seven days, beginning Nov. 11, was devoted to raising this large fund, and more than $50,000,000 was received.

Regular Activities.—In the regular work of the Y. M. C. A., the number of organizations recognized by the International Convention is 2,087; directors and committee forces, 91,155 men; paid officers, 5,188; total members, 720,468, of whom 48 per cent. are active, that is, members of evangelical churches. This indicates an increase of seven per cent. over the preceding year. Total net property and funds paid in amount to $97,025,000; contributions towards current expenses, $4,045,000; total operating expenses for regular work of the American movement, local and supervisory, $21,105,000; foreign-work supervision, $576,400; for work in connection with the European War and on the Mexican border previous to April, 1917, $1,500,000. The activities in all-around Association work in developing manhood include 50,600 socials, banquets, receptions, etc.; 250,500 men and boys training in gymnasium classes; 83,100 pursuing courses of study in the educational work; 150,100 in Bible-study classes; 85,000 situations secured for the unemployed; 32,300 decisions for the Christian life; and 9,311 uniting with the Church as a direct result of Association work. These figures indicate an increase of eight per cent. over the preceding year.

Foreign Work.—The foreign work, with its 450 employed officers, exceeds that of all preceding years in results sought and obtained. Native trained leaders in the various mission fields now exceed 300, or 50 per cent. more than the foreign leaders. The volume of local support is growing. Government recognition of this service was never so marked and favorable. Great gains have been made in turning the attention of members to the improvement of social conditions.

MISCELLANEOUS

The Federal Council in War Activities.—The Federal Council of the Churches of Christ in America held a special meeting in Washington shortly after the United States entered the European War, and declared its policy in support of the Government in all ways in which its constituent churches can properly coöperate. It represents the Protestant churches in securing chaplains from them for the army and navy, coöperated with the Red Cross in raising its $100,000,000 fund, and keeps up its work for the relief of the suffering in the war countries of the world.

Decrease of Ministerial Students.—The war is having a noticeable effect on the attendance at the various denominational theological seminaries. Some of the larger institutions report a falling of ranging from 30 to 40 per cent.

General Synods of the Reformed Churches.—The General Synod of the Reformed Church in America (Dutch) held its annual session at Asbury Park, N. J., in June. Prof. J. Preston Searle of New Brunswick, N. J., was chosen president. Report was made of progress in the preparation of a new *Hymnal* by joint committees of the two Reformed Churches for use in both denominations. The triennial session of the Reformed Church in the United States (German) was held at Dayton, Ohio. Dr. C. E. Miller, president of Heidelberg College, Tiffin, Ohio, was elected president of the General Synod.

National Unitarian Conference.—The National Unitarian Conference held its biennial session in Montreal, Canada, in September. This was the first time it had crossed the border into Canada, where there are a number of churches in communion with the National Conference. The president of the Conference, William H. Taft, in his presidential address reviewed the work of the two years and advocated resolutions relating to the war, upon which there was an interesting and somewhat strenuous debate. Rev. John Haynes Holmes of New York, a well known peace advocate, desired to have the resolutions softened in their tone and statement, but they were carried substantially unchanged by a vote of 236 to 9. They were outspoken in support of the Allies in the war.

The Russian Orthodox Church.—The war has changed conditions for the churches almost as much as it has changed them for the national Governments. In Russia the dethronement of the Czar released the Orthodox State Church from imperial restraint and direction. The Holy Synod, the governing body of the Church, at its meeting in March, cast out the Czar's chair from the conference room, and immediately related itself to the new democratic Government. It does not cease to represent a state church, but it will have a much larger degree of freedom in developing its life and work. Another notable change is the restoration of the Patriarchate, after a long interval, Archbishop Tikhon, formerly of the Uniteds, having been chosen as Patriarch of the Russian Church. Other forms of religion—Judaism and Mohammedanism, as well as various Christian sects, such as the "Old Believers," the Raskolniks, etc., numbering 12,000,000—will share with the Orthodox Church larger, though not complete, liberty under the Republic. The sects have been nominally free for several years, but the Jews have labored under troublesome restrictions. M. Lvoff, at the time a member of the Cabinet, was the new procurator of the Holy Synod, and the Metropolitan of Kiev, a liberal-minded prelate, presided at the first meeting of the Holy Synod under the auspices of the Republic. The Russian Orthodox Church, which is one of the group known as the Eastern Orthodox Churches, who got their form of faith from Constantinople when it was a Christian capital, has many churches in America, with an archbishop and an Ecclesiastical Consistory. The territory of the Church is divided into six districts, one of which is in Alaska and one in Canada. The various Balkan and Oriental principalities, as Rumania, Bulgaria, Serbia and Syria, also have church organizations in the United States, as has also Greece, this group of churches having in all about 500,000 members and adherents.

JUDAISM

Abram S. Isaacs

A Year of Relief Work.—The year's record of the Jew in the United States is largely a story of relief work. Besides his contributions to the general war funds, the Red Cross and a variety of other calls, a campaign for $10,000,000 was begun in January to help the suffering Jews in lands devastated by the war. In 1916 about $4,000,000 was subscribed for this purpose. Despite the concurrent campaigns for home relief funds, the suffering throughout Poland, Galicia, Russia and Palestine was so widespread and of such severity that within a few months nearly $7,000,000 was received by the American Jewish Relief Fund, with every likelihood of reaching later the full amount desired, thereby securing Julius Rosenwald's conditional gift of $1,000,000. This success was attributable in great measure to the admirable relief organization, including the different Jewish committees, which was managed with the maximum of efficiency. On Oct. 28 a special meeting of a thousand delegates was held in New York to provide for still further help, in view of the prolongation of the war.

In common with the other creeds, the Jews took a keen interest in the food campaign, Rev. Joseph Krauskopf of Philadelphia representing them on the national board. In the special department of aid in the army and navy, in which all the denominations showed such zeal, the Jew did his part. It is estimated that fully 50,000 of the Jewish faith were enrolled in the National Army, and agencies to increase their comfort and provide for their spiritual welfare were quickly formed, the Y. M. H. A. being especially active in the work and the order of B'nai B'rith showing similar interest. A number of Jewish chaplains were appointed later in the year, and the admirable efforts of the Roman Catholic and Protestant organizations have been emulated. In the cantonments the rooms of the Y. M. C. A. have been thrown open to the managers of the Y. M. H. A. in kindly brotherhood.

Religion and the Schools.—Just before Christmas of 1916 the acting superintendent of the New York public schools issued a general circular to principals forbidding them to question children about their religious beliefs or to classify them in any way. At Bridgeport, Conn., at the suggestion of the Council of Jewish Women, teachers were warned by the superintendent of schools to observe the rule forbidding interjection of sectarian teachings, readings or discussion in the classrooms. In February the Arizona legislature, following protests by national Jewish societies, rejected a bill to introduce the Bible in public schools. On Feb. 16 the Minneapolis Board of Education eliminated the reading of "The Merchant of Venice" in public schools. On March 16 Lutherans and Jews protested against a bill in the Minnesota legislature providing for Bible readings in the public schools. In line with this movement a bill prohibiting racial or religious discrimination was introduced in the New Hampshire legislature by Senator Marcel of Nashua. On April 20 the Colorado legislature passed a law to prevent discriminatory advertising by hotels, while on March 12 the Judiciary Committee of the General Assembly of Connecticut considered a bill to prohibit racial or religious discrimination in public places.

Events at Home.—After much heated discussion, the Jewish congress called to promote the cause of religious liberty of the Jews abroad, particularly in the countries at war, was finally postponed until after the conclusion of peace, to the satisfaction of the great majority of American Israelites, who saw no reason for special action. An English translation of the Bible was issued by the Jewish Publication Society, through the generosity of Jacob H. Schiff, who celebrated his seventieth birthday in January by giving $575,000 to various causes, including $100,000 to a pension fund for rabbis. The American Jewish Historical Society had its twenty-fifth anniversary in February. Simon Bamberger of Salt Lake City was elected governor of Utah in November, 1916. Samuel Campner was elected mayor of New Haven, Conn., in March. Harry Scheffer was appointed to a leading position in the Department of Philosophy in Harvard University. Prof. Leo S. Rowe of Pennsylvania was appointed Assistant Secretary of the Treasury in May. Prof. Felix Frankfurther of Harvard became confidential assistant to the Secretary of War in May. H. H. Lehman of New York was appointed technical expert to the Navy Department in May. Prof. Albert A. Michelson was appointed official scientific adviser to the War and Navy Departments in April. Harry L. Davis was selected mayor of Cleveland, O., during the year.

Events Abroad.—Strict censorship barred information as to the Jews of Germany, although many soldiers gained crosses for gallant service. Emperor Charles of Austria-Hungary inherited the friendliness of Francis Joseph towards all creeds; among his recent appointments was that of Dr. Wilhelm Vazsonyi of Budapest, of the Jewish faith, as Minister of Justice in the Hungarian Cabinet. It is difficult to learn the exact position of the Jews of Poland and Lithuania under German rule; stories are told of German cruelty on the one hand and Polish intolerance on the other, but trustworthy data seem to be wanting to form more than hasty views. From Turkey also come conflicting reports of cruelty to fugitive Jews and massacres, but Ambassador Elkins, who has recently returned from Constantinople, denies such rumors and credits the Turks with kindlier feelings. In England occasional rioting broke out in Leeds and elsewhere against the Jewish residents, due to the conscription law and the feeling that Russian Jews in England should not be exempt; only a few thousand left for Russia to escape British military service, and the great majority enlisted in English regiments. In Russia the emancipation of the Jews has begun a new era. They are now filling many posts as provincial commissioners, chiefs of police, etc. In South Russia they have obtained their own autonomy, with a special Minister of Jewish Affairs and other concessions. In May the Finnish Diet passed a law giving equal rights to the Jews of Finland. During the three years of the war, the official Russian military journal reports 60,791 Jewish soldiers received decorations, fully ten per cent. of those granted. Rumania retains its old illiberal policy, but in October, on the arrival of the first Rumanian Ambassador to the United States, Premier Bratiano stated that the Jews would now have equality before the law and be eligible as officers in the army. Numbers of prominent Italians who are not Jews, have formed a society to secure recognition of Jewish rights throughout the world. In Palestine, due to war conditions, the Jewish colonies suffered displacement. About 6,000 Jews had to leave Jaffa, being scattered in other colonies in Galilee and elsewhere. The plantations are intact but the economic conditions are pitiable.

The Zionist Movement.—The declaration by Great Britain of its purpose to facilitate the efforts of the Zionists to establish a national home for the Jewish people in Palestine, which was formally announced by Arthur J. Balfour, Secretary of State for Foreign Affairs, in a letter to Baron Rothschild, vice-president of the British Zionist Federation, on Nov. 3 carries with it a proviso that the establishment of a Jewish state in the Holy Land shall not in any way conflict with the rights of non-Jewish communities now existing in Palestine. It also carries pledges of Great Britain to oppose any project offered at the peace conference which might in any way impair the rights and political status enjoyed by Jews in any other country. The full text of the British declaration is:

> His Majesty's Government views with favor the establishment in Palestine of a national home for the Jewish people, and will use its best endeavors to facilitate the achievement of this object, it being clearly understood that nothing shall be done which may prejudice the civil and religious rites of existing non-Jewish communities in Palestine or the rights and political status enjoyed by Jews in any other country.

Necrology.—The deaths of the year among American Jews include Sir Moses Jacob Ezekiel, sculptor and Civil War veteran, Rome, Italy; Rabbis Joseph Friedlander, Plainfield, N. J., A. L. Alperstein, New York, Israel Kaplan, New York, and Leonard J. Levy, Pittsburgh, and Samuel Margolis, Cleveland; Selmar Hess, publisher, New York; Samuel H. Isaacs, scholar, New York; Ella Jacobs, educator, Philadelphia; Isaac N. Seligman, banker, New York; Herman Rosenthal, scholar, New York; Morris Weidenthal, journalist, Cleveland; Abraham Slimmer, philanthropist, Dubuque, Iowa; Henry L. Lazarus, jurist, New Orleans, La. Among prominent foreign Jews the deaths included Joseph Halevy, Orientalist, Paris; L. Zamenhof, inventor, Warsaw; Alfred Moseley, philanthropist, London; Leopold de Rothschild, London; Rabbi Abraham Drabkin, Petrograd; Wilhelm Singer, journalist, Vienna; Jacques Hartog, lecturer on music, Amsterdam; Israel Leevy, Orientalist, Breslau.

RELIGIOUS BODIES IN THE UNITED STATES IN 1916

The statistics below indicate increases for the year 1916 as follows: ministers, 2,531; churches, 279; communicants, 920,899. The largest gain in communicants was made by the Roman Catholic Church, 389,956, the number of communicants of that body being estimated at 85 per cent. of the Catholic "population." The next largest gains were reported by Methodist and Baptist bodies, 136,176 and 131,879, respectively.

XXVII. RELIGION AND RELIGIOUS ORGANIZATIONS

RELIGIOUS BODIES IN THE UNITED STATES IN 1916.[1]

	Bodies	Ministers	Churches	Communicants
Adventist	6	1,501	2,794	112,054
Baptist	15	43,911	57,734	6,534,132
Brethren (Dunkards)	4	3,645	1,295	128,594
Brethren (Plymouth)	4	......	403	10,566
Brethren (River)	3	224	105	4,903
Buddhist	2	15	74	3,165
Catholic Apostolic	2	33	24	4,927
Catholic (Eastern Orthodox)	7	404	475	485,500
Catholic (Western)	3	20,017	15,609	14,504,592
Christadelphians	1	......	70	1,500
Christians	1	1,066	1,360	106,159
Christian Catholic (Dowie)	1	35	17	5,865
Christian Union	1	365	330	16,825
Church of Christ Scientist	1	2,998	1,499	85,096
Churches of God (Winebrennerian)	1	434	484	28,033
Churches of the Living God	3	101	68	4,286
Churches of the New Jerusalem	2	140	150	9,772
Church Transcendant	1	2	3	148
Communistic Societies	2	......	70	1,989
Congregationalist	1	5,974	6,106	790,488
Disciples of Christ	2	8,424	11,182	1,337,450
Evangelical	2	1,572	2,573	209,917
Faith Associations	9	241	146	9,572
Free Christian Zion Church	1	20	15	1,835
Friends	4	1,379	964	119,371
Friends of the Temple	1	3	3	376
German Evangelical Protestant	1	59	66	34,704
German Evangelical Synod	1	1,089	1,389	247,787
Jewish Congregations	1	1,084	1,769	143,000
Latter Day Saints	2	4,260	1,713	415,000
Lutherans	21	9,847	15,289	2,454,334
Scandinavian Evangelical	3	663	577	62,900
Mennonite	12	1,488	813	64,796
Methodist	16	41,800	62,783	7,608,284
Moravian	2	148	147	21,859
Nonsectarian Bible Faith Ch's	1	50	204	6,396
Pentecostal	2	1,011	1,013	36;119
Presbyterian	12	13,885	16,298	2,171,601
Protestant Episcopal	2	5,680	8,134	1,078,435
Reformed	4	2,223	2,808	514,543
Reformed Catholic	1	7	6	3,250
Salvation Army	1	3,225	967	28,203
Schwenkfelders	1	6	6	1,072
Social Brethren	1	15	17	1,262
Society for Ethical Culture	1	7	6	2,450
Spiritualist	1	......	1,500	200,000
Theosophical Society	1	......	174	5,861
Unitarian	1	504	472	71,110
United Brethren	2	2,247	4,092	366,877
Universalist	1	662	865	58,300
Independent congregations	......	267	879	48,673
Total	171	182,731	225,483	40,190,931

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[1] Prepared by H. K. Carroll.

XXVIII. ART, ARCHÆOLOGY, MUSIC, AND DRAMA

PAINTING, SCULPTURE, AND HANDICRAFTS

WILLIAM B. M'CORMICK

Artists and the War.—The most striking feature of the year 1917 in the field of art was the participation of artists and craftsmen as such in the military and naval service of the nation. The practical use made by the French Army of that country's artists and craftsmen in the so-called Camouflage Corps suggested the creation of similar organizations in the United States soon after a state of war was declared with Germany. One artist, William A. Mackay, the mural painter, had been working on the problem of marine camouflage with officers of the U. S. Navy since before the outbreak of the European War, and many of our patrol boats and merchantmen have been painted in accordance with designs worked out by him for the creation of low visibility at sea. The camouflage idea was taken up by a group of artists in New York City, headed by E. H. Blashfield, who offered their services to the Government. These, however, have been chiefly concerned in designing and carrying out the decorations of the streets and public squares of New York City for the numerous receptions given to the various commissions from our Allies, the superb beauty and great variety of which have never been approached in this country. Another group of artists, under the initiative and direction of Henry Reuterdahl, employed themselves in making signs and posters for the recruiting campaign for the Army and Navy, the fruit of their work being sent all over the country. Out of these two movements grew another for the creation of a Camouflage Corps for service in France. Everts Tracy, a New York architect who was graduated from the Plattsburg training camp with the rank of major in the Officers' Reserve Corps, was put in charge of the plan to organize the Corps, and he has the distinction of being the first officer in the U. S. Army to receive a War Department order directing him to "camouflage duty". The company which he organized was trained at Camp American University in Washington, and is known officially as Company A, 25th Engineers. The enlisted men of the company include painters, sculptors, architects, designers, and craftsmen, such as scene painters, sign painters, stage carpenters, plaster-cast moulders and masons. A record unit, Co. B, 24th Engineers, was organized later and recruited to full strength.

Museums.—Two new museums were built and opened during the year—the Dudley Peter Allen Memorial Art Building of Oberlin College, which was dedicated on June 12, and the State Museum in Santa Fe, New Mexico, which was dedicated on Nov. 26. The first of the structures is 120 ft. long and 100 ft. deep, one story high, and consists of two separate buildings connected by a cloister court. The building is the gift of Mrs. Dudley Peter Allen of Cleveland, in memory of her husband. The Santa Fe museum is an example of the New Mexico Mission style of architecture and is chiefly devoted to exhibits of American origin, particularly of arts and crafts of prehistoric and modern Indians. As a part of the opening ceremonies there was an exhibition of paintings by the Jaoz group of artists, including E. J. Couse, Blunenschein, Henri and others. The Toledo Museum received a gift of $1,000,000 during the year, $400,000 coming from E. D. Libby and the rest being raised by popular subscription; as a result, the museum building will be doubled in size, 12 exhibition galleries and extra class and service rooms being included in the new plan. The Minneapolis Art Museum received a bequest of $100,000 in the will of Major John Bigelow of that city. In April Mrs. Daniel Catlin presented to the City Art Museum of St. Louis a collection of 30 modern paintings of the French, Dutch, American and German schools as a memorial to her husband, who was a member of the board of control of the museum for 27 years. The Metropolitan Museum of Art of New York established a Print Department and opened its first exhibition of prints in April. It also gave two memorial exhibitions, one devoted to the work of the late William M. Chase from Feb. 19 to March 18, and the Thomas P. Eakins exhibition from Nov. 4 to Dec. 3. A distinguished loan exhibition, which was shown in the Museum from June to October, was the John H. McFadden collection of examples of the British school, which had previously been on exhibition at the Carnegie Institute in Pittsburgh as the Founder's Day Exhibition. As a bequest from Isaac D. Fletcher the museum receives his residuary estate of over $3,000,000 and 251 objects of art selected from his collection. The museum also received a bequest of property worth $1,100,000 from John Hoge of Zanesville, Ohio; and from J. P. Morgan, on Dec. 17, all of the art objects collected by his father and then on exhibition in the museum including about 3,000 objects not inclusive of the Greau collection of 4,500 pieces of ancient glass and pottery which is mentioned separately as a part of the gift. There are 30 paintings alone in this new gift from Mr. Morgan. The new south wing of the museum which completes the Fifth Avenue front, was formally opened on Dec. 3, being devoted to the classical department. J. P. Morgan, Jr., presented to the trustees of the Wadsworth Athenæum, Hartford, Conn., on Feb. 12 the collection of porcelains and other objects of art that had been in the Metropolitan Museum for some years and in addition the sum of $50,000 for its maintenance fund. The Brooklyn Art Museum gave one of the finest exhibitions of the year, comprising 140 pictures by early American artists. In the Museum of the Hispanic Society of America in New York City was shown in February a group of 26 tapestries and carpets loaned by the King of Spain, the tapestries being from designs by Goya. The City Art Museum of St. Louis made its annual exhibition of paintings by American artists from Sept. 23 to Oct. 28; paintings being admitted for the first time by a jury as well as by invitation. The St. Louis Salon of 1917 inspired the Chamber of Commerce to offer a prize for a St. Louis scene, while the St. Louis Art League's prize of $500 went to Charles K. Gleeson for his picture of the "Old Court House, St. Louis".

The Boston Museum of Fine Arts received as a gift from the late Quincy A. Shaw through his heirs, on Nov. 23, the Shaw collection of 25 paintings and 25 pastels and etchings by J. F. Millet, together with about 20 Italian Renaissance sculptures. The Cleveland Museum received $100,000 as a bequest from Mrs. Mary Warden Harkness.

Sculpture.—A heroic bronze standing figure of Lincoln modelled by George Grey Barnard and first publicly exhibited in New York City in January was formally unveiled in Lytte Park in Cincinnati on March 31, the work being a gift to the city by Mr. and Mrs. Charles P. Taft. A replica of this bronze, which probably is a more perfect realization of the gaunt and homely original than any of the older sculptural portraits of Lincoln, was selected by the American Committee for the Celebration of the Century of Peace between Great Britain and America as its gift to England, the statue to be erected in London, Mr. and Mrs. Taft being the actual donors. When this became known, Robert T. Lincoln, son of the martyred President, wrote to Ex-President Taft protesting against the proposed gift. In May the *Art World*, edited by F. M. Ruckstuhl, the sculptor, began a bitter attack on the statue and protested against its being presented to England. This resulted in a widespread newspaper controversy over the work, marked by much heat and bitterness and not a little bad taste, the opponents of the idea of the gift continuing their protests even after the British Government formally accepted the gift on Oct. 18. On Nov. 15 the Council of the National Academy of Design passed a formal protest against sending replicas of Barnard's statue to England and France.

Statues emplaced during the year included Daniel Chester French's portrait statue of Lafayette in Prospect Park, Brooklyn, which was unveiled in the presence of Marshall Joffre on May 10. On May 12 at the College of the City of New York was unveiled a copy in bronze of J. Massey Rhind's Gettysburg statue of Gen. Alexander S. Webb, who was formerly president of the College. An equestrian statue of Gen. J. B. McPherson by John Paulding of Chicago was unveiled at McPherson, Kan., on July 4. A standing figure of President McKinley by J. Massey Rhind was dedicated on Oct. 5 in the McKinley Memorial Building at Niles, Ohio

Medallic Art.—The entry of the United States into the war brought forth two medals. The American Numismatic Society issued one of these to commemorate the declaration of war. Eli Harvey modelled the design, which is 3½ in. in diameter, the white-headed American eagle being the chief element; 40 copies were cast in silver and 450 in bronze. The National Arts Club of New York City offered a prize of $500 for a design for a valor medal, to be presented for conspicuous bravery to any person in the military or naval service of the United States. The competition was won by Allen G. Newman of New York City. His medal shows a figure of Patriotism on the obverse with an aggressive eagle on the reverse. Daniel C. French designed a medal to be presented by the City of New York to the men who made the great Catskill water system of that city (see X, *Water Supply*) an actuality. On the obverse is a classic female head, typifying the City of New York, while on the reverse is a male figure pouring water from a jar held across his breast, with mountain tops in the background.

Handicrafts.—Through the initiative of organizations more primarily concerned with pictorial art and sculpture than with applied art, the craftsmen of the United States had offered to them during the year an unusually rich array of prizes. At the sixteenth annual exhibition of applied art held in the Art Institute of Chicago (Oct. 9-28) prizes amounting to $1,260 and medals given by Mr. and Mrs. Frank G. Logan were announced. In September the Artists' Guild of Chicago held a competitive exhibition of crafts work and distributed five prizes of $100 each. Cash prizes amounting to $1,000 were paid to the winners of a competition for textile designs conducted by the Art Alliance of New York in October. The Boston Society of Arts and Crafts had two exhibitions during the year of special interest, one in March made up of ecclesiastical embroideries, and one in November in connection with the Society of Architects, the Society of Landscape Architects, and the Boston Architectural club.

The Johnson Collection.—Through the death in Philadelphia on April 14 of John G. Johnson, the noted lawyer, the city of Philadelphia came into possession of his valuable collection of paintings. When the collection was catalogued in 1914 it contained nearly 1,300 pictures; the number at Mr. Johnson's death was nearly 1,800. By the terms of his will he left his home in South Broad Street as a museum to contain his art collection and an income of $25,000 a year to maintain the museum, but stipulated that the city must agree to pay any sum for expenses beyond this. The city authorities finally arranged to provide the necessary funds, the total appropriation being upward of $900,000, this action being taken shortly before Oct. 14, on which date the collection would have reverted to the Metropolitan Museum of Art in New York if the City of Philadelphia had not agreed to the conditions of the will. The collection, which has been valued at $4,500,000, includes examples of the French, Italian, Flemish, Dutch, German, Spanish, and British schools, with many modern pictures. It was unquestionably the finest private collection in the United States.

Societies.—The American Federation of Arts held its eighth annual convention at Washington on May 16-18, the general topic considered being "Art and Civilization". Herbert

Adams was elected president of the National Academy of Design on April 25, to succeed J. Alden Weir, this being the first time a sculptor has been president of the Academy in many years. In March a new society called the Painter-Gravers of America was formed in New York, for the purpose "of continuing the great traditions of the artist-print in its many phases". Childe Hassan was elected chairman of the association. The executive committee of the American Academy in Rome, Italy, began a movement in March to raise an endowment fund of a million dollars and to pay off the debts of the institution. The Academy suffered a grave loss on July 22 through the death of the director, Jesse Benedict Carter (see also *Classical Archæology, infra*).

Exhibitions.—The only show of the year promising any novelty was the first annual exhibition of the Society of Independent Artists, which was held in the Grand Central Palace in New York City from April 10 to May 6. The plan of the Society, of which William J. Glackens was president, was to afford to the artists of America the same opportunity presented in France by the Independent Salon. The rule of the Society was that there was to be no jury and no prizes, anyone wishing to pay $6 having the privilege of sending two of his works to the exhibition and having them hung. The result was that about 2,100 pictures were shown, the majority being of a deadly dull mediocrity. The American Water Color Society held its fiftieth annual exhibition in the National Arts Club (Feb. 1-24). The exhibition of the Architectural League of New York (Feb. 4-24) included 756 exhibits and was more purely architectural in character than for some years past. The League awarded the medal of honor in architecture to John Russell Pope, the medal for sculpture to H. A. MacNeil, and the medal for painting to Maxfield Parrish. The one hundred and twelfth annual exhibition of the Pennsylvania Academy (Feb. 4-March 25) included 445 paintings and 205 sculptures, the prizes being awarded as follows: Carol H. Beck gold medal to Joseph T. Pearson, Jr., for "The Twins"; George B. Widener memorial medal to Attilio Piccirilli for "The Flower of the Alps"; E. T. Stotesbury prize of $1,000 to Hugh H. Breckenridge for "Philadelphia"; the Temple gold medal to George Bellows for "A Day in June"; the Jennie Sesnan gold medal to Haley Lever for "Morning in the Harbor"; the Mary Smith prize of $100 to Eleanor Washington for "Winter"; the Walter Lippincott prize of $300 to Arthur Carter for "Sunset"; and the Philadelphia prize (awarded by popular vote) to Ernest L. Major of Boston for "Nausica". The ninety-second annual exhibition of the National Academy of Design (March 16-April 23) included 330 paintings, 44 sculptures and a group of miniatures. The Clarke prize was given to Max Bohm for his "Children of the Sands"; the Julius Hallgarten prizes to Howard E. Smith for his portrait of Bela L. Pratt, to John Folinsbee for "The Canal in Winter", and to Sydney E. Dickinson for his "Unrest". The Altman prizes of $1,000 and $500 were awarded to Charles H. Davis for his "Call of the West Wind", and to Ben Foster for his "Late Summer Moonrise"; the Inness gold medal to Earnest Lawson for "Hills at Inwood"; the Isaac N. Maynard prize to Adolphe Borie for "A Girl in Black"; and the Saltus medal of merit to Charles S. Chapman for his "In the Deep Woods". The winter exhibition of the National Academy of Design opened on Dec. 14 to continue through Jan. 13, 1918. The Altman prize of $1,000 went to Daniel Garber for "Boys"; the second Altman prize of $500 to Karl Anderson for "Portrait of Mother and Five Sons"; the Proctor prize of $200 to W. J. Whittemore for a portrait of Talcott Bates; the Isidor Medal to Alice Kent Stoddard for "A Child of Mohegan"; the Shaw Memorial prize of $300 for sculpture to Malvina Hoffman for "A Russian Bacchanale"; the Helen Foster Barnett prize to Paul Manship for "Dancer and Gazelles"; and the Elizabeth N. Watrous gold medal for sculpture to Sherry E. Fry for "Unfinished Figure." At the thirtieth annual exhibition of American paintings and sculpture at the Art Institute of Chicago in November the Mr. and Mrs. Frank G. Logan medal and $1,500 went to Albin Polacek for his portrait bust of Charles W. Hawthorne; the Potter Palmer gold medal and $1,000 to E. L. Blumenschein for "The Chief Speaks." The Norman Walt Harris silver medal and $500 was awarded to Charles Reiffel for "In the Hills" and the same donor's bronze medal with $350 was given to Guy C. Wiggins for "Lightly Falling Snow."

Necrology.—John J. Boyle, sculptor, died on Feb. 10 in his home in New York City. He was born in New York in 1851, began life as a stone carver, and studied at the Franklin Institute, Pa., and the Beaux Arts, Paris. His best known works are the Benjamin Franklin statue at the Philadelphia Post Office, the Bacon and Pluto statues in the Congressional Library, and the statue of Commodore John Barry in Washington. Jules Turcas, landscape painter, died in his home in New York City on March 18 in his sixty-fourth year. Turcas, one of the Lyme (Conn.) colony, was a frequent exhibitor at the New York Academy of Design and the Philadelphia Academy exhibitions and received medals of honor at the Buffalo and St. Louis expositions. Sir Moses Ezekiel, the American sculptor, died on March 27 in Rome, Italy, where he had lived for many years. He was born at Richmond, Va., in 1844, and studied at the Royal Academy in Berlin, winning the prize of Rome in 1873. He was knighted by the German Emperor, and the King of Italy conferred upon him the title of Officer of the Crown of Italy. Albert Pinkham Ryder, painter, died in his home at Elmhurst, N. Y., on March 28. He was born in New Bedford, Mass., in 1847 and studied in this country and in Europe. He became a member of the Society of American Artists in 1878, was an Academician of the National Academy of Design, and also a member of the National Academy of Arts and Letters. Bela Lyon Pratt, sculptor, died in his home in Boston on May 19. He was born in Norwich, Conn., in 1868, and had been one of the teaching staff of the Boston Museum Art School since 1893. Among his best known works are the figure of Nathan Hale at Yale, the statue of Edward Everett Hale in the Boston Public Garden, the symbolic figures of Science and Art at the entrance to the Boston Public Library, and the spandrel figures and medallions in the Congressional Library in Washington. He was a member of the National Academy of Design and the National Sculpture Society. L. H. Meakin, painter of New England landscapes and for 20 years a member of the staff of the Cincinnati Art Museum, died in Boston on Aug. 15. A native of England, Meakin came to this country in his youth and studied at the old School of Design in Cincinnati and in Munich and Paris. He was a member of the Cincinnati Art Club, and was president of the Society of Western Artists for a time. James Carroll Beckwith, painter of portraits and genre pictures, died in New York City on Oct. 24. He was born in Hannibal, Mo., in 1852. He began the study of art in Chicago in 1870, going to Paris in 1873, where he studied in the Beaux Arts and under Carolus Duran. He was a frequent contributor to the Salon, where he won prizes, as well as at the Paris International Exhibitions of 1889 and 1900. He had been a National Academician since 1894 and was also a member of the National Institute of Arts and Letters. Among his best known portraits are those of Ex-President Roosevelt and Mark Twain.

ARCHITECTURE

F. Huntington Bosworth, Jr.

General Tendencies.—If architecture is to be adjudged as good or bad as it fulfills the needs of the time which created it, reflecting in its stones and brick the physical and social problems of its day, few periods of its history in the United States should present such salient points of interest as the year 1917—a negligible length of time in the history of an art, but one which, coming as the culmination of a period of readjustment of social values, is great enough to show those activities and those needs with which society can least well dispense. War ruthlessly eliminates the non-essential, and although the whole resources of the country have not as yet been drawn into the conflict, the process has begun, and every phase of the country's activities has been subjected in a greater or less degree to the test of its essentiality to society as a whole. The subtler aspects of national thought, as manifested in its architecture, are not easily recognized at the time of their appearance, and it is only due to the fact that war unifies and simplifies the way the country thinks that makes their recognition a present possibility.

Notable Buildings.—Non-essential building has been stopped, that is, building to house those activities which society for the moment at least considers it can forego. That which has continued may fairly be considered as essential, particularly if the same conclusion is reached by the people of every part of the country. This would seem to be the fact. It is the building for educational purposes which would seem to show no diminution in volume or cramping in development. The buildings of interest of the year are almost exclusively schools or colleges. Many of them are of quite exceptional merit, of which those in California form a distinctive group, departing as they do so strikingly from the old conception of the school house. The Polytechnic Elementary School in Pasadena, by Myron Hunt and Elmer Grey, the Los Angeles State Normal School and the Glendora Grammar School, both by Allison and Allison, the grammar schools at Clio by Whitey and Davis and at Suisan by E. J. Symmes and William H. Crim, Jr., are all buildings showing the trend of modern educational thought as conditioned by environment. A partial list of other educational buildings of note evidences the wide distribution of such activities, including as it does, the Cornell University buildings by Day and Klauder, the Loomis Institute at Windsor, Conn., by Murphy and Dana, the Kendrick Seminary, St. Louis, by John T. Comes and Thomas F. Imbs, the Convent and Academy of Notre Dame, Boston, by Maginnis and Walsh, the Edward Lee McClain High School, Greenfield, Ohio, by William B. Ittner, and the George Peabody College for Teachers, Nashville, Tenn., by Ludlow and Peabody. The San Francisco Public Library by George W. Ketcham might be included also in this list of educational buildings; it is one in which the conventional lines have been more closely adhered to than has been the case in the other examples cited from California.

New York City has become in recent times more and more a city of apartment houses, each year seemingly producing them in greater number and of a more luxurious type. In this category is one completed during the year at Seventy-second Street and Fifth Avenue by J. E. R. Carpenter. The McNain residence in the same city by H. Van Buren Magonigle is a composition of quite distinct interest both in disposition and treatment.

While it is usually dangerous to generalize or attempt to draw conclusions from comparatively scant premises, yet in reviewing the architectural compositions mentioned as characteristic and of note for the year certain resemblances are discernible. Directness would seem to be one, a clearness of thinking in trying to meet the problem in hand, and with it a simplicity of expression unassociated with poverty of appearance or lack of decorative value.

The Architectural Profession.—Comparatively slight data are as yet available as to the work which has been done by the architectural profession in meeting the direct needs of the war. Many individuals or firms have been retained by the various departments of the Government to assist in war work and by industrial corporations directly affected by the war. The American Institute of Architects offered its services, as did most other professional bodies, at the entrance of the United States into the conflict, and in one case it was retained as a body to undertake a definite piece of work—the preparing of plans for certain enlargements of the hospital facilities at the Brooklyn Navy Yard. This work was carried out by a committee of the Institute acting for and representing the profession as a whole. As a recruiting agency which has been of assistance to the Government in filling certain definite positions in the service, the Institute has perhaps done more up to the present time than in any other way. As yet the architect has not been recognized as a professional man whose services as such are needed. As an individual he has entered almost every branch of the service without as yet making any one peculiarly his own.

Industrial housing is but just making itself felt as one of those acute problems, the solution of which will vitally affect the military efficiency of the country. As in England it is in meeting this problem that the most direct utility of the trained architect is making itself felt. The *Journal of the American Institute of Architects* has recognized this fact, publishing a series of reports on what has been done in England not as a temporary expedient, but as a permanent solution of this problem of changed and changing social conditions—a problem that is now recognized as one not of the war only, but of peace as well, a solution of which is necessary to the permanent wellbeing of the nation. (See also VI, *City Planning*, and *Housing*.)

The subject of architectural education is sufficiently discussed elsewhere (see XXX, *Education*). In general the schools report a loss of from 30 to 50 per cent. of their architectural students, the larger part of this loss being among the more advanced students, who were either subject to draft or have volunteered in some one of the branches of military service.

LANDSCAPE ARCHITECTURE

AUBREY TEALDI

Professional Notes.—The entrance of the United States in the Great War has naturally reacted upon the profession of landscape architecture. This reaction has been most marked in the eastern states, where a general retrenchment was noticeable early in the summer. In the Middle West, on the contrary, even more work than in previous years has been undertaken and signs of slackening have been apparent only the latter part of the year. The tendency to engage professional landscape architects is continually increasing. This is a welcome manifestation, and in time it should lead to a greater discrimination among clients, a broader vision among the younger practitioners, and a stimulating spirit of competition in the profession at large.

The American Society of Landscape Architects, which had already pledged its support to the movement for the restoration and rebuilding of Belgium, has been gathering valuable material in coöperation with the Comité Neerlando-Belge d'Art Civique. The object of this committee is to group and correlate the efforts of those who wish to help in the rebuilding of both the cities and the country of Belgium on the most scientific and æsthetic lines.

A committee of the American Society of Landscape Architects, together with committees of the American Association of Nurserymen, American Association of Park Superintendents, American Pharmaceutical Association, and the Ornamental Growers' Association, all constituting the American Joint Committee on Horticultural Nomenclature, has issued a code of standardized plant names after a very thorough study of the subject. This list is the first attempt to overcome the confusion, inconvenience and losses which result to buyers and sellers of plants from the use of different names for the same plant and of the same name for different plants. The Committee, to which a great deal of credit is due for the valuable work already accomplished, urges everyone interested in plant names to help in the work by offering suggestions and criticisms.

Chapters of the American Society of Landscape Architects now organized are as follows: New York, Boston, Mid-Western, and Minnesota. The New York chapter has been discussing the possibility of its members' being of service to the Government as members of the camouflage unit organized in the U. S. Army (see *Painting, Sculpture, and Handicrafts, supra*).

In addition to the regular meetings of the members of the American Society of Landscape Architects and its chapters, meetings at which landscape architects delivered many of the most important addresses, were those of the

National Conference on City Planning at Kansas City in June and the American Civic Association at St. Louis in October (see also VI, *City Planning*).

Exhibits.—A collection of drawings of current landscape work was exhibited at the Missouri Botanical Garden, St. Louis, and later in other centers. A committee of the American Society of Landscape Architects has been appointed to get together travelling exhibits by which plans, sketches and photographs of work already done may be shown all over the country.

Public and Private Work.—Landscape architects have already done important work in the preparations for war by giving assistance in the layout of the new army cantonments (see XX, *Civil Engineering*), many of them taking actual charge of the work on the site. It is apparently the consensus of opinion among officials and others concerned, that the layouts determined for these various cantonments in such short order by the planners whose services have been used by the Government have been on the whole most successful, and that the employment of civilian experts as planners has been altogether justified by the results. Since nearly everyone of the planners is a landscape architect, this success is a legitimate source of satisfaction to the profession, which has thus demonstrated its peculiar fitness for serving the country in its present need. It seems inevitable that the generally recognized success of this service is bound to serve well the profession of landscape architecture by giving it a more firmly established, more widely recognized status than it has ever had before.

Plans have been completed or are being made for the new State Capitol grounds at Harrisburg, Pa., in which Pennsylvania plants exclusively will be used, beginning with a governors' row of trees, the first one of which has been planted in honor of William Penn; the Capitol grounds, Springfield, Ill.; Davidson Park; Lexington, Va.; grounds of Iowa State College, Ames, Ia.; University of North Carolina, Chapel Hill, N. C.; Carleton College, Northfield, Minn.; a country club and members' residence subdivision at Waterford, Mich.; Woodhill Country Club, Lake Minnetonka, Minn.; subdivisions of over 1,000 acres to include public reservations at Akron, O.; Evergreen Cemetery, Roanoke, Va.; Cartago Cemetery, Costa Rica; the industrial villages of Green Acres, Bridgeport, Conn.; Overlook Colony, near Marcus Hook, Del.; Loveland Farms, Youngstown, Ohio; besides the many studies which are being made in the wider field of city planning (see VI, *City Planning*).

National Parks.—By Act of Congress 40 sq. miles has been added to Rocky Mountain National Park. The National Park Service has published for free distribution automobile road maps of Glacier, Rocky Mountain, Crater Lake, Sequoia and Mt. Rainier National Parks. The development of these parks as actual recreation grounds has been greatly fostered, a sum of $511,300 having been appropriated by Congress for their improvement and protection in 1917. Mount Hi Crow on the east bank of the Missouri in North Dakota has been designated by President Wilson as the Verendrye National Monument. The reservation will include 250 acres and will be in charge of the National Park Service.

Bibliography.—The principal publications of the year, exclusive of city-planning reports (see VI, *City Planning*), include:

BAILEY, L. H.—*Standard Cyclopædia of Horticulture,* vols. V-VI. (Macmillan Co.)

CLUTTON-BROCK, A.—*Studies in Gardening,* with preface and notes by Mrs. Francis King. (Scribners.)

CRIDLAND, Robert B.—*Practical Landscape Gardening.* (De LaMare Co.)

DEAN, Ruth.—*The Livable House: its Garden.* (Moffatt, Yard.)

HARDING, Mrs. Edward.—*The Book of the Peony.* (Lippincotts.)

JEKYLL, Gertrude.—*Annuals and Biennials.* (Scribners.)

HUBBARD, H. V., and KIMBALL, Theodora.—*Introduction to the Study of Landscape Design.* (Macmillan Co.)

MATHER, S. T.—"Progress in the Development of the National Parks". (U. S. Department of the Interior.)

MAWSON, T. H.—*Bolton as It Is and as It Might Be.* (Scribners.)

PUCKLER-MUSKAU, Prince, ed. by PARSONS, S.—*Hints on Landscape Gardening.* (Houghton, Mifflin.)

"Shade Trees." (Mass. Agricultural Experiment Station Bull. 170.)

TRELEASE, W.—*Woody Plants.* (Carnegie Institution of Washington.)

Wilder, Louise B.—*My Garden.* (Doubleday, Page.)

Wilson, E. H.—*Aristocrats of the Garden.* (Doubleday, Page.)

Yeomans, A. B.—*City Residential Land Development.* (Univ. of Chicago Press.)

ARCHÆOLOGY

CLASSICAL ARCHÆOLOGY

William Nickerson Bates

Publications.—During 1917 the continuation of the European War has very seriously interfered with archæological studies. Excavations by Americans have ceased, and such progress as has been made consists for the most part in the publication of material in museums in the United States. Thus, since the appearance of the Year Book for 1916, Prof. George H. Chase of Harvard University has brought out an illustrated catalogue of the Arretine vases in the Boston Museum of Fine Arts. As the Boston collection is large and important, this catalogue is really a monograph on this style of Roman pottery. Another work is Richard B. Seager's *Cemetery of Pachyammos, Crete,* in which he describes his excavation in 1914 and 1915 of the small Minoan cemetery at Pachyammos on the north side of the Isthmus of Hierapetra. The burials were usually in large jars and dated from the period known as Early Minoan III to Late Minoan I, that is, the cemetery was in use for 700 or 800 years down to 1500 B. C. The bodies were placed in the jars in a crouching position, and, with the exception of an occasional cup, no small objects were buried with them. Another important book is J. C. Hoppin's monograph on the Attic vase painter Euthymides and some of his contemporaries. An important contribution in the *American Journal of Archæology* (1917, p. 117) is a new theory of the origin of the Doric entablature by Leicester B. Holland. He argues that it was developed from a brick and timber construction by the Dorians and that there is no evidence of a Cretan or Mycenæan origin.

Museums.—The acquisitions of classical antiquities by American museums have not been so numerous as in former years. The Metropolitan Museum of New York has added some vases from southern Italy to its collections. In Philadelphia the University Museum has acquired a fine Attic grave stele dating from the fourth century B. C. It has in high relief two bearded men standing before a seated woman who is grasping the right hand of one of the men. In the background pilasters with lintel and anthemia above may represent the side of a building. This museum has also acquired several important Greek vases.

Italy.—Italian archæologists have announced a few discoveries in Italy. At Bettona an Etrusco-Roman tomb of unusual form was explored. At Castellina in Chianti the large underground building discovered in 1902 was found to have four corridors and chambers arranged in the form of a cross. At Curinga a valuable hoard of archaic coins of Magna Græcia came to light. Excavation of the house of Trebius Valens at Pompeii revealed part of the roof of the ambulacrum still in place, the only instance yet found; the fall of another part of the wall had cut off four members of the household whose skeletons were lying near. Outside the Stabian Gate a Samnite-Roman cemetery was partly explored. In the Greek theatre at Syracuse the torso of a caryatid of the time of Hiero was unearthed. More important discoveries have been made at Ostia where two well-preserved houses have been excavated. One had on two sides, at the height of the second story, a balcony which, although it had fallen, could be put back in place. The second house is remarkable for its mosaics and paintings, particularly for a series of portraits of bearded men, probably philosophers. An important fragment of a long inscription gives a record of the events for the years 36, 37 and 38 A. D.

Necrology.—Classical archæology has suffered severe losses in the deaths of Prof. John Williams White of Harvard University (May 9) and Prof. Jesse Benedict Carter (July 20). Professor White was one of the founders of the American School of Classical Studies in Athens and for many years chairman of its managing committee. He was president of the Archæological Institute of America from 1897 to 1903. Professor Carter, who had been professor of Latin at Princeton University, went to Rome in 1904 as the annual professor in the American School of Classical Studies there. In 1907 he became director, succeeding the late Professor Richard Norton, and in 1913 when the School and the old Academy became united, was made director of the American Academy in Rome. He was especially interested in Roman religion. While on his way to the Italian front, commissioned by the American Red Cross, he died at Cervignano as a result of sunstroke.

EPIGRAPHY

Clifford H. Moore

The war has naturally reduced epigraphical publications almost to zero. Nevertheless there are a few things that may be noted. Near the end of 1916 Part IV, Section 2 of *The Ancient Greek Inscriptions in the British Museum* was published by the trustees of that institution. In the *Revue des Etudes Anciennes* (Part XIX, Sec. 2) Holleaux discusses under the title of "*Textes Gréco-Romains*" some interesting inscriptions already known. In the *Revue des Etudes Grecques* Roussel has a similar article, entitled "*Notes Epigraphiques*". Rasi in the *Rivista di Filologia* (Part XLV, Sec. 3) presents an article on a Christian epigraph recently found near Rome on the road to Ostia, and also on the restoration of the reading of a Pompeian graffito.

In the *Notizie degli Scavi di Antichità* (1916, Nos. 3 to 10) are found a considerable number of inscriptions discovered for the most part in and about Rome or Pompeii. Some of these contain interesting deviations of formulæ recently known. Comparatively few deserve special notice. We may, however, call attention to a fragment found at Ostia (p. 138), which belonged to an inscription of a certain C. Minicius Italus, who had a significant career under Vespasian and possibly under Titus and Domitian, being procurator in the provinces of the Hellespont, Asia (where he governed for a time when the proconsul died in office), and of Lugdunensis and Aquitania; he was also prefect of the grain supply and governor of Egypt. The same number of the *Notizie* (p. 156) reproduces in facsimile a new painted Oscan inscription from Pompeii; and it (p. 319) gives also the text of two *cippi* of travertine set up by L. Messius Rusticus, curator of the Tiber, etc., dating from the year 121.

An addition is made to our collection of *tabulae defixionum* by the publication (p. 304) of three new tablets found at Pompeii. Of only one of these can the text be made out to any extent, and even there it is fragmentary. Finally, we may notice that the walls of Pompeii still yield us evidences of the universal knowledge of Virgil and of the human tendency to scribble; some *graffiti* are reproduced (p. 234), the first of which is the opening words of the Æneid, and the last, two rude sketches of birds.

MUSIC

Frederick H. Martens

General Survey of the Year.—The year 1917, like its immediate predecessors, has been one of strenuous and fruitful musical activity in nearly every field. Yet, while these first three years of the war have encouraged the creation and performance of works by American composers, owing to the falling away of European competition, the entry of the United States into the conflict, to judge by European experience, seems bound to react unfavorably on music. With the creative energy of the country concentrated on war production and the mind of the nation obsessed by war issues, the arts, including music, are thrust into the background of national consciousness. Thus far the reaction has been little felt. The more obvious sign of the changed status, an immense output of cheap "patriotic" and "war" songs, together with a few of genuine merit, has been counterbalanced by the renewed impetus given to community singing, the developments of mass singing in the army camps, and the increased representation of the American composer on the concert programme. A regrettable development of nationalistic prejudice against Teutonic music, however, a prejudice which has no place in the broad universalism of art, must be deplored. The proposed banishment of Wagner from opera, and the elimination of German symphonic works and songs from orchestral concerts and recitals is on a par with the dropping of German-language study from school curricula; while the persecution of an artist of the character of Fritz Kreisler reflects little credit on true ideals of democracy. In the operatic field the year cannot be called a representative one for the American composer, but in all others it reflects credit on his achievements. The Musical Alliance of the United States, recently founded by John C. Freund, with its aim to add a Secretary of Fine Arts to the national Cabinet, may be interpreted as a valuable preparedness movement to "unite all interested in music and in musical industries" for the support of an art which a long-continued war and the conditions arising therefrom are certain to affect adversely.

Opera.—The "American" opera of 1917 was Reginald de Koven's *The Canterbury Pilgrims* produced at the Metropolitan Opera House on March 8. Effective from a scenic point of view and melodious after the manner of Sullivan, it was generally held to be, musically, comic opera in an *opera seria* guise, and to fall below the standard set by Parker's *Mona* and Herbert's *Natoma*, despite the dramatic shortcomings of the one and the poor libretto of the other. The American operas of the year 1918, Henry Hadley's *Azora* and Arthur Nevin's *Daughter of the Forest* (Chicago), and Charles Wakefield Cadman's *Shanewis, The Robin Woman*, (New York) would seem to promise more, while a distinctively American contribution to the music of the modern ballet will be Henry F. Gilbert's "The Dance in Place Congo," adapted from the composer's symphonic suite. There has been an increase in the number of French Italian and Russian scores performed, and Liszt's *St. Elizabeth*, not properly an opera, is the only new German work for 1917-18. The performances of regular repertory and newer works have maintained in nearly every case the high standard set by the Metropolitan Opera House company. Mascagni's *Isabeau*, which scored an artistic success in Chicago on Nov. 16, and a revival of Meyerbeer's *Dinorah* a few days later were features of the first half of the 1917-18 season in that city. Rabaud's *Marouf, le Savatier du Caire*, a brilliant modernistic score with sumptuous stage pictures, duplicated its Paris and Milan successes at the Metropolitan Opera House in December. Incidental operatic developments in New York have been the presentation of a new Italian score, *Evandro*, by Stefano Guierrieri, Sicilian and melodramatic, well received at the Garden Theatre, and the production of various Spanish *zarzuelas* in English by Arieta, Palacios and Valverde. Perhaps the most significant operatic development of the year has been the active and hearty rivalry inaugurated between the Chicago and New York companies, which will prove a stimulating factor, unless the repressive conditions of war time intervene, in adding new works of real merit to the existing repertory.

The Ballet.—A departure in the terpsichorean field was Adolf Bolm's *ballet intime*, which introduced dance interpretations by this distinguished artist — *Danse Macabre* (Saint-Saëns), a virile Assyrian dance, as well as Japanese dances by Michio Ito, for which a young American composer, Charles T. Griffes, supplied striking original tonalizations, and Hindoo dances by Roschanara. Mlle. A. Rasch (*ballet classique*), the Pavley-Oukrainsky Ballet (with Barrère's Little Symphony Orchestra), Pavlova, Tortala Valencia, and numerous other interpreters have striven and have been successful, though indirectly, for the popularization of music in connection with their art.

Community Music and Pageant Music.—Interest in community music and pageant music has been well maintained. In most of the larger cities and many of the smaller towns civic music associations and community choruses are a well established factor in community life, giving independent "sings" and collaborating with choral clubs, civic orchestras and other local musical groups. The linking-up of community chorus work with the music of the military training camps has been one of its most useful and inspiring features. The entire movement has been spoken of by mass psychologists as a step toward fusing into unity the divergent groups in American life. The publication of an official *Army and Navy Song Book* is a reflex of this work. Among pageants given during the summer may be mentioned *The Pageant of Nebraska* (Lincoln, Neb.), the music by Howard I. Kirkpatric, introducing Omaha tribal melodies, French *voyageur* songs, pioneer ballads and patriotic themes with skill and effect. Another work, one which combines both pageant and community features, is Percy MacKaye and Arthur Farwell's "community masque", *The Evergreen Tree*, widely presented at Christmas.

Symphonic Music.—Various symphonic novelties and *quasi*-novelties by American composers have been presented during the year. Among them should be instanced *Two Indian Dances* by Charles Sanford Skilton, skillful developments of aboriginal tribal themes (Cincinnati Symphony Orchestra); Henry F. Gilbert's symphonic prologue, *Riders to the Sea*, a sombre and impressive score (New York Philharmonic); Adolf Brune's *A Twilight Picture*, scholarly rather than inspired (Chicago Symphony); MacDowell's *Woodland Sketches*, orchestrated by Emil Oberhoffer (American Symphony Orchestra, Chicago); Chadwick's *Tam o'Shanter*, "first time in New York" (New York Philharmonic); *The Fable of the Hapless Folk-Tune* by Eric Delamarter, and John Alden Carpenter's *Symphony No. 1* (Chicago Symphony); though the major portion of the orchestral novelty presentations will take place during 1918.

Orchestral works of new or little known foreign composers which have received a hearing are the Swiss composer Ernest Bloch's Israel symphony, "Jewish Cycle; the Italian modernist Casella's *Italia*, symphonic poem; and Smetana's *Vitava;* while various Russian works included "a symphonic picture", *Hyrcus Nocturnus*, by Vassilenko, somewhat bloodless; a *Dance of the Goat-footed Sylvans*, by Satz, programmatic but innocuous; the brilliant ballet-music of the third act of Rimsky-Korsakov's *Mlada* (Russian Symphony Society); and the fine symphonic suite arranged from Igor Stravinsky's ballet *L'Oiseau de feu* (New York Symphony Orchestra). A pendant to the activities of the larger symphonic orchestras is to be found in the work of the constantly increasing school and civic orchestral organizations.

Choral Music.—Among new choral scores presented during the year were Grainger's *Song of Democracy*, Henry Hadley's *Ode to Music*, H. T. Parker's *Red Cross Hymn*, and Clarence K. Bawden's *The River of Stars*. Hadley's *The Fairy Thorne*, William Lester's sacred cantata *The Little Lord Jesus*, *The Bells* by Montani. The *a cappella* negro choruses of J. Nathaniel Dett, and H. T. Burleigh's negro spirituals in chorus form also call for mention. Notable developments in the field of song composition are H. T. Burleigh's negro spirituals (already mentioned) reshaped as art songs; and the appearance of a new and original figure in Bryceson Trehame, a Welsh composer who has come to the fore with a number of songs of unusual merit, many of them composed in the enforced seclusion of the German prison camp of Ruhleben.

Music in Europe.—The stress laid on the semblance of prosperous musical seasons in Paris, London, Rome, Berlin and Vienna may be dictated in part by policy. It is a question whether it reflects musical conditions throughout the warring countries. Yet it cannot be denied that in the face of adverse musical conditions much has been done. The capitals have all had opera and have heard novelties: London, *Ivan*, *Khovantchina*, *Boris*, Bizet's *Fair Maid of Perth;* Paris, Léon Moreau's *Myri-*

alde, Lesueur's *Les Bardes,* a revival with Dalcroze dancing, Fauré's *Prométhée,* Alfred Bruneau's *Les Quatres journées,* Méssager's *Béatrice,* and (November) the chief event of the season, the *première* of the English composer Raymond Rose's *Jeanne d'Arc,* said to be a veritable masterpiece, virile in concept, modern in development and a notably fine product of the martial inspiration in music; Rome, Sabata's *Macigno,* Mascagni's *Lodoletta,* etc.; Petrograd, Massenet's *Cléopatra,* Veniosky's *Mégaé,* Cui's *Fils du Mandarin;* Berlin, Walterhausen's *Oberst Chabert,* Weingartner's *Dame Kobold,* Humperdinck's *Gaudeamus igitur;* Vienna, Nedbal's *Winznerbraut,* O. Strauss' *Rund um die Liebe,* Lehar's *Sternengucker, et al.* Symphonic and choral concerts seem to have been frequent and well attended, and, as in the United States, there have been a great number of recitals and musical entertainments for war charities.

Literature.—The year's list of musical literature includes several books on Russian music: *Contemporary Russian Composers,* by M. Montagu-Nathan, a study at first hand of the younger men in Russian music, their art and ideals; and *Scriabin: A Great Russian Tone-Poet,* by Dr. Eaglefield Hull, mainly devoted to intelligent analysis of the composer's works. *Leo Ornstein. The Man, His Ideals, His Works,* by Frederick H. Martens, deals with the art theories and accomplishment of the ultra-modern Russian composer-pianist. A technical work of more than ordinary value, supplementing and bringing up to date Berlioz and Gavaert, is Cecil Forsyth's *Orchestration;* a useful pendant to this work is Gaston Borch's *Practical Manual of Instrumentation,* while a novel departure in this field is Arthur Edward Johnstone's excellent *Instruments of the Modern Symphony Orchestra.* Charles Macpherson has written a *Short History of Harmony,* "with illustrations ranging from Hucbald to Ravel". A presentation of the latest phases of the art of composition in France is Réné Lenormand's *Study of Modern Harmony.* Additions to the many "opera guides" are Gustav Kobbe's *Complete Opera Book,* with "400 of the leading airs and motives in musical notation", and *The Opera Book* by Edith Ordway.

Henry T. Finck offers a critical biography of one of the most interesting of modern composers in his *Richard Strauss, The Man and his Works.* Mary H. Flint has published *Impressions of Caruso and His Art,* and Constance Hull has translated Romain Rolland's *Beethoven* into English. Of biographical as well as critical interest is also the second book of Harriet Brower's *Piano Masters,* a series of talks with such pianists as Hofmann, Godowsky, Grainger, etc. Carl van Vechten's entertaining book on *Interpreters and Interpretations* is also replete with intimate biographic detail, and contains the most exhaustive study of Eric Satie and his work thus far published.

The Ethics and Æsthetics of Piano Playing, by Constantin von Sternberg, gives practical expression to modern keyboard æsthetics, while in *The Sources of the Power of Music,* Ella White Custer analyses its basic principles and their influence on the mind. Perhaps the most delightful book of essays the year has produced is O. G. Sonneck's *Suum Cuique: Essays in Music,* which cover a wide range with taste, judgment and humor. A most valuable contribution to American musical folk lore are the *English Folk-Songs from the Southern Appalachians,* collected by Olive D. Campbell and Cecil J. Sharp. Of practical interest to the singer are: *Vocal Art-Science* by Dr. Frank E. Miller, and W. Henri Zay's *Practical Psychology of Voice and of Life.* Of specific interest is Thomas Tapper's *The Music Supervisor.* Among foreign books of the year are: *La Musique française d'aujourd'hui* by G. Jean Aubry, *L'Esprit de la Musique Française, de Rameau à l'Invasion Wagnerienne* by Pierre Lasserre, a study of the Wagnerian influence in French music from the literary and sociological as well as from the musical standpoint; and *La Musique Militaire,* by Michel Brenet, a timely, ably written account of its subject from its beginnings to the present day.

Necrology.—The year's necrology includes some important names. Bernard Listenau, founder of the Boston Philharmonic Society (out of which the Boston Symphony Orchestra developed), died on Feb. 11. A pupil of David, Vieuxtemps and Joachim, he was once concert-master of the Thomas Orchestra in New York. Dr. George Robertson Sinclair, the famous English cathedral organist and festival conductor, died on Feb. 14, at Hereford, aged 54; and in the course of the same month, at Oxford, Harry Ellis Wooldridge, author of *The Polyphonic Period* in the Oxford *History of Music* and editor of Chappell's *Popular Music of the Olden Time*. Willy von Sachs, a well-known musicographer (at one time contributor to the *Sun*, *Evening Post*, and other New York papers) died in Vienna on Feb. 24, aged sixty. In the same city Eduard Strauss, son of Johann, composer of 246 dances beside a number of comic operas, died on Dec. 29, 1916. Edouard de Reszke, the opera basso, brother of Jean, died in Poland on May 31. Born in 1855, début 1876 in *Aïda* in Paris, he was prominent at the Metropolitan Opera House during the nineties of the last century.

Mme. Teresa Carreño, born at Caracas, Venezuela, in 1853, who died in New York on June 12, was one of the greatest pianists of all time, especially renowned for the fire and brilliancy of her playing and her artistic concept. William Furst, who composed much incidental theatre music (notably for Frohman's plays and for Belasco), died at Freeport, N. Y., on July 11. He wrote the music of the Anglin, Greek and Shakespearean plays (Berkley Stadium, California) and for *Joan the Woman*, acted by Geraldine Farrar. Capt. Basil Hood, librettist of Sir Arthur Sullivan's *The Rose of Persia* and of Edward German's *Merrie England* and *A Princess of Kensington*, died in August; and in the same month, the English conductor and composer Edward Jones died (*A Pantomime Rehearsal*, *The Forty Thieves*, etc.). Alfred De Keyser, a Belgian composer, whose operas (*Nina*, *Stella Maris*, etc.) were well known in continental Europe, died at Bournemouth, England, on Oct. 2, and during the same month was announced the death of Karl Julius Maria Beethoven, grand-nephew of the master and the last of the Beethoven family, "in a military hospital in Vienna". On Oct. 28 William F. Glover, composer and operatic conductor, died in New York: and at about the same time Will M. S. Brown, who had written much popular sacred music (oratorios *King Solomon*, *Lazarus*, *Story of Christ*, etc.) died in Wilmington, Del. Henry Clay Barnabee, one of the original "Bostonians," a well-known bass, who had sung the *rôle* of the *Sheriff of Nottingham* some 1,900 times—he sang only "by ear," died at Jamaica Plains, Dec. 15.

THE DRAMA

Walter Prichard Eaton

The Theatrical Year.—During the year 1917 (from Dec. 1, 1916, to Dec. 1, 1917), in the theatres of the Broadway district in New York, where it is possible to keep a record and where the so-called "commercial" drama is either started or ultimately finds its way if it is at all successful, there were produced 126 long plays and musical comedies or spectacles in the English language, 30 one-act plays, and several Shakespearean dramas, the latter entirely comprised in a two weeks' repertory engagement of Robert B. Mantell and a brief attempt by Thomas Wise to play "The Merry Wives of Windsor". This is a somewhat higher total than in 1916, but not quite so high as in 1915. More than half of the total number of plays produced, however, came after the opening of the autumn season. Between August and December there were offered no less than 82 new entertainments, two of them accounting for seven one-act plays. Over half of these had either closed permanently or left New York for "the road" before the end of November.

This division shows rather clearly one striking feature of the year 1917 in the theatre. Until April the United

States had not declared war, and even after April it took some time for the full effects of that declaration to make themselves felt. The winter of 1916-17 in the theatre was one of great prosperity, at least in New York City. But when the theatres opened again in the autumn they opened to a public swayed by a different psychology. The Liberty Loan campaigns, the shortage of certain commodities, such as coal and sugar, the rising prices of all necessities of life, the general excitement and unrest, all conspired to affect theatre attendance adversely. On top of this came the imposition of a ten per cent. tax on all tickets (passes as well as purchased tickets), becoming effective on Nov. 1. The tax especially had a sudden and extremely depressing effect on the theatres, not only in New York but all over the country. The first two weeks in November probably saw fewer people in the so-called "first-class" theatres than during any similar period in a generation. It is as yet too early to say whether this depression is permanent or whether there will be a gradual recovery. At the time of writing, business is still bad. It is to be noted, however, that the motion-picture houses especially, and to a considerable extent also all cheaper entertainments where the ten per cent. tax does not amount to much and the admission, even with it, is low, are thriving without complaint. It would appear that our participation in the war will result in a high percentage of failure for the better class of plays, only the most popular being able to survive, and, possibly, in a reduction of salary for actors and a lowering of the prices of admission.

Another result of the war on our theatre has been so considerable an increase in the number of native plays that the foreign percentage during the year has been almost negligible. This is due, of course, rather to the fact that few available plays are now being tested out in England and the Continent rather than to a conscious desire on our part for an exclusively native fare. The year saw Shaw's comedy, "Misalliance". There were three one-act plays by Barrie, including that little masterpiece, "The Old Lady Shows Her Medals". There was a production by Lester Lonergan of Bataille's fine, lofty drama, "The Torches" (*Les Flambeaux*), and a production by Grace George of Bernstein's adaptation of the eternal triangle to French tastes in war time, "*L'Elévation*", both productions made in the autumn. Leo Ditrichstein appeared in November in an amusing satire from the French of de Flers and Caillavet, called "The King", and a merry comedy, "The Tailor-Made Man", was produced successfully in a clever adaptation from the Hungarian. John Drew appeared in a revival of Pinero's "The Gay Lord Quex". There were one-act plays by Dunsany and other foreigners and musical plays with foreign sources. But, for the most part, Europe is now a barren hunting ground for the actor or manager, and more untried and unknown American playwrights have had a hearing in 1917 than almost ever before.

Classification of Plays.—So many modern plays are of mixed *genre* that any definite classification is impossible, but counting roughly as drama all plays with a serious note and as comedy all those whose purpose is the creation of laughter without descending frankly to farce, we find that, of plays, there have been produced 34 dramas, 39 comedies, but 13 out-and-out melodramas, and only nine confessed farces. (The Shakespearean revivals are not here included.) As against these 95 plays, there have been produced 31 musical comedies, reviews and spectacles with music, or about 25 per cent. of the total. This is but a small fraction more than in 1916, and seems to show that the musical play is not greatly increased in vogue even by the tension of war and the public desire to escape the oppression of reality in the playhouse. There has not been, indeed, any noticeable increase in the proportion of distinctly frothy entertainment. The lighter forms of comedy are the most popular, but by no means exclusively so, and straightaway old-fashioned farce does not seem to be popular at all, even such a successful farce as Le Barron's "The Very Idea" being based on a satire on eugenics and deriving much of its appeal from its wit and character drawing. American farce seems rapidly reaching a point of definite differentiation from its English cousin and still more from its Gallic prototype. As developed by men like George M. Cohan, it has achieved a certain surface realism, an illusion of realty, a touch of character drawing, even of satire, which sometimes lifts it toward true comedy and which certainly has made American audiences discontented with the old-fashioned door-slamming styles, which now are relegated to the motion pictures.

Notable Productions.—It must be confessed that there were few outstanding dramatic triumphs by all these American playwrights who had their chance in 1917. Probably the most notable success by a new playwright was that of Clare Kummer. In 1916 she wrote a novel farce-comedy called "Good Gracious Annabelle" (*A. Y. B.*, 1916, p. 747), which was staged in the new, simplified manner by Arthur Hopkins, with scenery by Robert Jones. Early in 1917 her second play, "A Successful Calamity", was produced by the same men, with William Gillette (her cousin) in the leading *rôle*. This comedy was even more delightfully conspicuous for a highly flavored, uniquely personal wit and fantastic sense of fun, and for beauty of stage picture and simple, seemly settings. Miss Kummer's third play, "The Rescuing Angel", produced in the autumn with Billie Burke in the leading part, was so badly acted that it is hard to estimate its true value. However, it is safe to say that Miss Kummer has won for herself a unique niche in our theatre.

Another writer who had disclosed in the past with the Washington Square players a pretty wit and a taste for intellectual burlesque is Philip Moeller. In November Mrs. Fiske appeared in the title *rôle* of Mr. Moeller's first three-act play, "George Sand". The presence of this, our most distinguished, subtle and brilliant American actress in the character of one of the most fascinating and unconventional females of the nineteenth century promised a rare treat. The promise was only half fulfilled, unfortunately, in part because Mr. Moeller chose to treat the affair as a burlesque rather than a serious comedy of character, in part because he lacks skill as yet to sustain a play for three acts, in part because Mrs. Fiske herself, always a lover of burlesque for all her abilities in high comedy and tragedy, appeared to relish the chance to paint with a trowel instead of with a brush. The entertainment, however, was on a considerably higher intellectual level than the current run of comedies.

A sincere but on the whole not very successful attempt was made by George Arliss to build a play about Alexander Hamilton. Jefferson was a leading figure, and did not persuade us that he ever wrote the Declaration of Independence. Guy Bolton and George Middleton tailored a pretty, harmless, artificial play for Ina Claire, called "Polly With a Past", which is still popular, and Mr. Belasco, the producer, also attracted the public with an old-fashioned, hackneyed melodrama, called "Tiger Rose"—a thing utterly of the footlights. Of much better stuff was "The Pipes of Pan", a bit of appealing romance by Edward Childs Carpenter, and "Maytime," by Rida Johnson Young, which, though a musical comedy, had a real romantic fragrance to it, a plot, dramatic interest, point and purpose. Of the older or more established American dramatists, such as Augustus Thomas, Percy Mackaye, Edwin Milton Royle, Thompson Buchanan, A. E. Thomas, Edward Sheldon, Eugene Walter, no new work was produced, though "Her Husband's Wife" by A. E. Thomas was revived in New York and played in both London and Paris.

There should be a special word of mention for a group of three plays by the poet Ridgley Torrance, about negroes, and acted by negro players at the Garden and then the Garrick Theatre in the spring. These plays were striking in their sincerity and insight, and the experiment of presenting them with negro actors was both interesting and unusual.

Of the foreign plays, J. M. Barrie's one-act drama, "The Old Lady Shows Her Medals", a quaint and touching sidelight on the war, Bataille's drama, "The Torches" (produced in Paris in 1912), Bernstein's "L'Elévation", produced by Miss George, and "The King", a merry skit acted by Leo Ditrichstein in his accustomed skilful manner, were among the best.

GROWING IMPORTANCE OF "LITTLE THEATRES"

Growing Importance of "Little Theatres".—Serious achievement in the native theatre in 1917, as in the preceding year, was to be found rather in the one-act form and in the smaller, experimental playhouses. The Washington Square Players continued their venture on Broadway, and down in Macdougal Street in New York a group of artists, writers and theatrical amateurs, calling themselves the "Provincetown Players", gave several bills of one-act plays which were notable for artistic value, for realism, for satire. These plays were acted, to be sure, by amateurs, and were open only to those invited to subscribe. But the best of them have been published and are being largely acted in other small theatres. In November the Greenwich Village Theatre, a small public playhouse, far downtown on Jackson Square, was opened under the guidance of Frank Conroy, formerly of the Washington Square Players company; and this new house at once and very successfully proved itself a disciple of experiment, novelty and artistic life.

The experimental little theatres are not confined to New York. In the autumn Constance D'Arcy Mackaye issued a book on *The Little Theatres in the United States* (Holt) which contains the record of over 50 experimental playhouses in various parts of the country, and in spite of the war these experiments are increasing in number. It is they which are responsible for the vogue of the one-act play, until recently almost unknown except in a debased form in vaudeville. It is they which are doing the most pioneer work in America in the problems of the new stagecraft, in imaginative settings, lighting, etc. Above all, it is they, and they alone, which are encouraging local playwrights to interpret the life of their own neighborhoods, their own sections of the country. As our national fiction has been largely built up of sectional interpretations (one thinks at once of Mary Wilkins, Sarah Orne Jewett, John Fox, Cable, Bret Harte), so also our national drama must be built up. It cannot be the typical commercial product for Broadway consumption and make any claim either to distinction or interpretation of national life. And largely because our drama has been merely this stereotyped thing, the little theatres have sprung up in revolt and are actually beginning to show results, from the satires of the Provincetown Players in Bohemian New York to the prairie pageants written by Professor Koch's pupils in the University of North Dakota. The little-theatre movement is the most significant thing in the American theatrical field at present, and after the war it will go on with renewed vigor.

Activities of The Drama League.—The Drama League of America has begun, apparently, to recognize this fact. Started some years ago to encourage the patronage of good plays in the "regular" playhouse, the League (which in 1917 moved its headquarters from Chicago to Washington) has now branched out in many lines, some of which bring more tangible results than the original bulletining of good plays. The League, for instance, maintains a bureau to give advice to amateurs regarding the choice of plays and the methods of production. In the spring of 1917 the New York centre produced a programme of acts from various American plays, beginning with Royal Tyler's "The Contrast", to show American drama in historic perspective, while the Boston centre produced "The Contrast" (the first American play about an American subject) entire, with costumes and stage settings as nearly as possible in period. The centre in Galesburg, Ill., has taken over the Prairie Playhouse and is conducting that little theatre more or less as a civic adjunct of the city, making Galesburg free of the tyranny of the second-rate road companies and giving the town better drama. The Hartford, Conn., centre conducted in 1917 a play contest for local writers, and the national organization inaugurated a nation-wide play contest for patriotic dramas, the result of which is not yet decided. All of these activities show a self-sacrificing and spontaneous devotion to the arts of the theatre and are signs that the exclusive conduct of our theatre by men whose one aim is to attract as many people to the box office as possible is not to be tolerated longer with patience. Whether it means that ultimately we shall have true municipal repertoire theatres in America, time alone can tell. Our little theatres may develop into something quite different from that, but, at any rate, they will develop, for more and more people are getting behind them, and that means better drama, more drama by native writers with sectional realism, and a more democratic control of our playhouse, which will be free from the bondage of Broadway. In spite of the war we have moved a little nearer the goal, if only by the body of plays issued by the Provincetown Players, which, with the Washington Square plays and certain dramas by the Wisconsin Players and other groups, already made available, constitute the beginnings of a practical, vital and interesting one-act repertoire. Amateurs need no longer go to foreign sources if they want to give a good programme, nor to the cheap vaudeville farces of a decade ago if they want to give a popular one.

Low Ebb of Acting.—We should like to close this summary with a vivid description of some actor or actress who has swum like a new comet into public view, but alas! none has swum. The commercial theatre plods its pedestrian way, with such old standbys as John Drew and Mrs. Fiske marking the red nights on the calendar, and the little theatres as yet have failed to bring forth acting to match their stage sets and their plays. Acting is at a low ebb in the American theatre. It will need a revival of romantic and heroic plays to restore to it its ancient thrill.

XXIX. LITERATURE AND LANGUAGE

AMERICAN LITERATURE

(*Nov. 15, 1916, to Nov. 15, 1917*)

EDWARD EVERETT HALE

Fiction.—The effect of the war upon imaginative literature so far has not been considerable. The change on the part of the United States from a state of public indecision to a state of actual action occurred too late to influence the spring publications, and the general production of books in 1917 is evidently greater than in the preceding year. The total number of books (including pamphlets) published in the United States in 1914 was 8,563; in 1915 it was 6,932; in 1916 it was 8,430; in 1917 it will probably have been nearly 9,000. The exact figures are not yet available, but an estimate can be made on the basis of the production of the first six months. During this period the books classified as fiction by American authors in 1914 numbered 689; in 1915, 643; in 1916, 703; in 1917, about 750. Of these books about one-fourth are usually new editions of books already published. Of this considerable amount of fiction, which includes but a very few of the great number of stories and novels which appear in the periodicals, only about one-half come to any general notice. Lists and summaries published by the *Dial* and other literary papers rarely mention more than half of what is included in the statistics as fiction. Such lists have varied somewhat in plan of late, but as far as we can judge, they also show an increased amount of fiction over 1916.

Of the novels which have come to such popularity as to find a place in the lists of "best sellers", the following have been in more than one of the monthly lists of 1917: Irving Bacheller's *The Light in the Clearing* (Bobbs-Merrill), Zane Grey's *Wildfire* (Harpers), Ernest Poole's *His Family* (Macmillans), Henry K. Webster's *The Thoroughbred* (Bobbs-Merrill), Basil King's *The Lifted Veil* (Harpers), Eleanor H. Porter's *The Road to Understanding* (Houghton, Mifflin), and Kathleen Norris's *Martie the Unconquered* (Doubleday, Page). In the full list for the year some other names will appear, for the books published in the fall have not at the time of writing had a chance to make their fair impression on the public mind. Still, even with this addition, there will not be so many American "best sellers" as there were in 1916. Lists of this kind often do not include really excellent novels, and often do include books of no lasting value. But they have been kept now for a good many years, and they show certain directions of popular interest. It may be mentioned that no American book published in 1917 has come to any such popularity as *Mr. Britling Sees it Through.*

If we take the general view of fiction offered in the YEAR BOOK for some years past, we shall not see much difference in 1917 in the general interests which have moved the writers, and presumably the readers, of the country. For a good many years now there has existed more or less consciously, in the artistic as well as in the public mind, the idea of a difference between the fiction which finds its interest in the presentation of more or less everyday life of the present day, and that which offers a certain excitement in exotic or out-of-the-way climes and situations. In the last years of the last century the writers of romance were in the ascendant. Year by year, however, though the change has been very gradual, our best writers have turned more and more to the presentation of common life, finding in everyday and ordinary characters and phases of life the interest and emotion which they need. The novel of adventure or mystery, of far lands and exciting situations and strange surroundings, the detective story or the story of the great outdoors, still make up a considerable part of the year's fiction. But the books that attract most attention are of a different sort. The same thing is to be observed in England, where H. G. Wells, who 20 years ago made a reputation by fantastic extravaganzas, now increases his fame by an almost unvarnished account of his own life during the war. We might mention in American fiction Winston Churchill, who 20 years ago delighted multitudes by his vigorous historical romances, but who now for a good many years has given himself mostly to the study of political, religious and social questions, and is able to interest people quite as much as he used to. At the same time it is also to be said that this difference between realism and romance is by no means so important as it once was. Few writers of the novels "of mystery, of romance, of adventure", to use the common phrase of the advertisement, are without a considerable element of current life. They are apt to find their beginning or their setting in some kind of life to which we are all accustomed. Nor are the writers of novels of current life without the elements of romance. The real distinction at the present day would seem to be between a presentation of life which shall embody some more or less definite ideal conception, and the presentation, whether realistic or romantic, of life without any such idealism.

Whether or no such a distinction be well founded, there are a number of novels of 1917 which have at bottom the desire to comprehend or exhibit some general criticism of American life. Ernest Poole's *His Family* (Macmillans) is undoubtedly an interesting story about interesting people, but its people are so chosen as to illustrate typical phases of American life and typical contrasts between the life of the present generation and that of the past. Waldo Frank's *The Unwelcome Man* (Little, Brown) is the story of a man who seeks vainly to find opportunities for the action of his spiritual functions in the life of to-day, and is quite a definite as well as pessimistic criticism of American civilization. Sherwood Anderson's *Marching Men* (Lane), which may seem on the surface almost a naturalistic transcript of life, is in reality the presentation of a great if vague idea as to the character of American life. There are as usual a number of books which are thought of as dealing with social problems of one sort or another, but they are rarely so directly concerned with their problem as was the case 20 years ago. Winston Churchill's *The Dwelling-place of Light* (Macmillans) brings vividly before us the relations of labor and capital, but it is much more informed by a general idea than expressive of any definite solution. Much the same thing may be said of the late D. G. Phillips' *Susan Lenox* (Appletons), though of course this book does not represent the conceptions of the immediate present. Here belongs Upton Sinclair's extremely interesting *King Coal* (Macmillans), as well as Henry K. Webster's *The Thoroughbred* (Bobbs-Merrill), rather a slighter consideration of some of the aspects of modern marriage than his book of two years ago. Mention only can be made of Basil King's *The Lifted Veil* (Harpers), Kathleen Norris's *Martie the Unconquered* (Doubleday, Page), and Eleanor H. Porter's *The Road to Understanding* (Houghton, Mifflin), but Dorothy Canfield Fisher's *Understood Betsy* (Holt) calls for particular note quite as much for its engaging humanism as for its ideas on education. There are also a good many books devoted to some special part of America or phase of American life, but they are rarely so definitely "local" as the stories of local color of a generation ago. Alice Brown's *Bromley Neighborhood*, (Houghton, Mifflin), Mary E. Wilkins Freeman and Florence M. Kingsley's *The Alabaster Box* (Appletons),, Edith Miniter's *Our Natupski Neighbors* (Holt), and Robert Cutler's *Louisburg Square* (Macmillans) present New England, city and country. Mrs. H. R. Martin's *Those Fitzenbergers* (Doubleday, Page) and Joseph Hergesheimer's *The Three Black*

Pennys (Knopf) deal respectively with the Pennsylvania Dutch and the Pennsylvania steel mills. Paul Kester's *His Own Country* (Bobbs-Merrill), Mrs. Honoré Wilsie's *Lydia of the Pines* (Stokes), and Mathilde Bilbro's *The Middle Pasture* (Small, Maynard & Co.) are distinctively Southern, while Mary Austin's excellent *The Ford* (Houghton, Mifflin) is Californian. Joseph C. Lincoln's books always have enough local color to them, but of course their chief charm is in their humor and character drawing; *Extricating Obadiah* (Appletons) is based on the mishaps of an old sailor who inherited a fortune. Of the stories devoted to particular phases of the life of our country, some of the best represent Jewish life in America. Of these Sidney Nyburg's *The Chosen People* (Lippincotts) is an excellent first-hand story of a young rabbi in an old conservative congregation, while Abraham Cahan's *The Rise Of David Levinski* (Harpers) gives the career of a Jewish immigrant in New York City. It is perhaps something of an accident that Edna Ferber's *Fanny Herself* (Stokes) should be a Jewish story; the chief interest, as in the author's other books, is in the capable woman of business. Such also is Sinclair Lewis's *The Job* (Harpers), a good unconventional chronicle of a woman who makes a success in the business world. We might put here (they are surely American enough) three studies of youth: Samuel Merwin's *Temperamental Henry* (Bobbs-Merrill), Mary R. Rinehart's *Bab, a Sub-Deb*, (Houghton, Mifflin) and rather more authentic than either, it would seem, K. Keith's *The Girl* (Holt), a singularly interesting and perhaps typical impression of an American girl. There are not a few other novels of American life, which ought not be forced into any classification; the two best are Mrs. Wharton's rather darkly tragic *Summer* (Appletons) and Francis R. Bellamy's good piece of romantic idealism, *The Balance* (Doubleday, Page). Here may be mentioned two characteristic though unfinished posthumous novels by Henry James (Scribners), *The Sense of the Past* and *The Ivory Tower*.

Turning to the other side of the field we have first the historical novels. Of these the chief novel of American history is Irving Bacheller's *The Light in the Clearing* (Bobbs-Merrill), a picture of life in northern New York in the generation before the Civil War, as it centered around the sturdy figure of Silas Wright. Will H. Harben's *The Triumph* (Harpers) is a story of the South of much the same period. Mary Johnstone's *The Wanderers* (Houghton, Mifflin) is a series of connected episodes running through the ages, which shows the author's gradual extension of range and interest. F. J. Stimson's *My Story* (Scribners), a fictional autobiography of Benedict Arnold, should be mentioned, though it can hardly have the influence of its predecessor, *King Noanett*, of 20 years ago. We should mention here also *The Sorry Tale* by Patience Worth (Holt), a story based on Biblical suggestion, concerning which many diverse opinions have been expressed. There are not so many good stories of adventure as there have been in past years. The popular favorite has been Zane Grey's *Wildfire* (Harpers), a story, like all its author's, noteworthy not for its adventure alone but for its deep appreciation of the beauty of our Western country. To be noted here also are Mrs. B. W. Bowers's *Starr of the Desert* (Little, Brown), Ernest Seton Thompson's *The Preacher of Cedar Mountain* (Doubleday, Page), the first novel of a writer otherwise well known, George B. McCutcheon's *Green Fancy* (Dodd, Mead), faithful to the Zenda tradition though in New England, and Robert W. Chambers's *The Barbarians* (Appletons). Several books might be more properly called stories of mystery than of adventure. Frances H. Burnett's *The White People* (Harpers) is a story of second sight; Mrs. Wilson Woodrow's *The Hornet's Nest* (Little, Brown), Allen French's *The Hiding-places* (Scribners), and W. J. Dawson's *A Daughter of the Morning* (Lane) come here. There are some good detective stories; best (with allowance for difference of taste) is William MacHarg and Edwin Balmer's *The Indian Drum* (Little, Brown). Others have approved

Anna K. Green's *The Mystery of the Hasty Arrow* (Dodd, Mead), Natalie S. Lincoln's *The Nameless Man* (Appletons), or Roman Doubleday's *The Green Tree Mystery* (Appletons). Carolyn Wells's *The Mark of Cain* (Lippincotts) and Nevil M. Hopkins's *The Mystery of Raccoon Lake* (Lippincotts) may also be mentioned. though neither is of the best work of its author. As is usual, some of the best books of the year are the extravaganzas, books often so engaging that one cannot pronounce them preposterous; a type of book pertinaciously American. Of these we name only Meredith Nicholson's *The Madness of May* (Scribners), Holworthy Hall's *What He Least Expected* (Bobbs-Merrill), G. Weston's *Oh Mary Be Careful* (Bobbs-Merrill) and (though it may not come best here) K. F. Gerould's clever, *A Change of Air* (Scribners). There are as ever a number of books of a kind passed over by many as "glad" books, which, however, often have a sterling foundation. Of these the most noteworthy appear to be Alice Hegan Rice's *Calvary Alley* (Century), Belle K. Maniates's *Amarilly in Love* (Little, Brown), Maria T. Daviess's *The Heart's Kingdom* (Reilly & Britton), and Grace S. Richmond's *Red Pepper's Patients* (Doubleday, Page). Finally we mention *The Sturdy Oak* (Holt), a suffrage tract, by 14 well known writers, most of whom have been otherwise mentioned in this review.

Short Stories.—There is of course an enormous number of short stories, of which only a very small proportion are collected in book form. Some idea of this form of American literature is given by E. J. O'Brien's *The Best Short Stories of 1916* (Small, Maynard) and H. T. Baker's *The Contemporary Short Story* (Heath). A curious collection is *The Grim Thirteen* (Dodd, Mead), in which F. S. Greene put together a number of stories which were good but too "grim" to pass the magazine editors. Of the collections by distinctive short-story writers would be M. R. S. Andrews's *The Eternal Feminine* (Scribners), Alden Brooks's *The Fighting Men* (Scribners), A. B. Reeves's *The Treasure Train* (Harpers), and C. E. Van Loan's *Old Man Curry* (Doran).

Poetry.—In 1917 one can more readily than usual take a view of current poetry by the help of two publications on the subject. Harriet Monroe and Alice Corbin Henderson, the editors of *Poetry*, have published *The New Poetry: an Anthology* (Macmillans), containing extracts from the work of about a hundred present-day poets (a good many English), with a preface in which they do something to define the ideas and aims of the present generation of poets. More limited in scope, but more particularly critical, are the four essays in Amy Lowell's *Tendencies in Modern American Poetry* (Macmillans). From these two books one can make a grouping of the writers of poetry of the present day. The half-dozen or more writers who some years ago associated themselves under the name of "imagists" are represented in the year's publishing chiefly by a third volume of selections, *Some Imagist Poets: an Anthology, 1917* (Houghton, Mifflin), and by J. G. Fletcher's *Japanese Prints* (Four Seas Co.) and F. S. Flint's *Goblins and Pagodas*. The general principles of this group have been definitely stated and somewhat understood for two or three years, but they now become more interesting from Miss Lowell's essay on "H. D." and on "Mr. Fletcher." Of several others who at one time or another have been associated with the group, Ezra Pound published in 1917 *Lustra* (Knopf); Robert Frost, who though he does not belong to this, or any other, group, but has some aims in common with them, has published *Mountain Intervals* (Holt), a book with much of the genius which is more and more impressing people. Edgar Lee Masters has published *The Great Valley* (Macmillans), a book in the main, of vigorous Americanism, of poems generally longer than those of the famous book by which he is chiefly known and without their condensed genius. Edwin A. Robinson's *Merlin* (Macmillans) is a rendering from the old legend-cycle of King Arthur. It is an effort at something larger than Mr. Robinson has heretofore done, and does not seem to have the particular powers of phrase and characterization of which he is usually the master. Vachell Lindsay, on the other hand, in his *The Chinese Nightingale* (Macmillans) is just like himself; one may call the poems all sorts of things, but they are indisputably effective, however they are styled.

These poets are obviously modern; it is not that they are devoted to images or free verse or anything else, but they clearly have something of the same sort of thing about them (with perhaps the exception of Mr. Lindsay) and they may easily be thought of together. There are several others who might properly be thought of with them though they do not happen to come within the range of Miss Lowell's treatment. Conrad Aiken's *Turns and Movies* (Houghton, Mifflin), John G. Neihardt's *The Quest* (Macmillans), and James Oppenheim's *The Book of Self* (Knopf) are definitely enough of the newer poetry. It is less easy to see why some of the others in Miss Monroe's collection should be "new" poets, if that term be held to show any general difference from the "old" poets. Sara Teasdale's *Love Songs* (Macmillans) are very charming poems, delightful to read and keep in mind now as they would have been at any time, but it is hard (for the present writer at least) to see any "newness" in them even with the assistance of Miss Monroe and Mrs. Henderson. Much the same thing might be said of Edith Wyatt's *The Wind in the Corn* (Appletons), which contains some poems which finely represent the spirit of America, in a way that, one would say, would have been possible even in the much-condemned Victorian era. W. Bynner's *Grenstone Poems* (Stokes) and Joyce Kilmer's *Main Street and Other Poems* (Doran) have in them poetic qualities which have been attractive before the present decade. There are some poets of our day who do not seem to write "new poetry", if we may judge from our anthology. H. B. Fuller is perhaps absent from being too new. He is best known as a novelist, and it is probable that his *Lines Short and Long* (Houghton, Mifflin) will be read with the same sort of interest that one would have for a short story. New enough but not of the newer school of poets is Grantland Rice, the well known sporting writer, whose *Songs of the Stalwart* (Appletons) express fine, manly ideas in fluent verse. Franklin P. Adams's *Weights and Measures* (Doubleday, Page) is a volume of very amusing and modern verse, though quite unlike what is commonly thought of as the new poetry. Further still from the newer aims is Walt Mason, who continues to interest thousands of readers daily with his homely and sensible ideas and his humorous and ridiculous expression. There have been published during the year Stanley Brathwayte's usual *Anthology of Magazine Verse* (Small, Maynard) and several other collections, of which may be especially mentioned *A Book of Verse of the Great War* (Yale University Press) and *The Poets of the Future: A College Anthology.*

Essays and Criticism.—There are a number of very good volumes of criticism. The best is *On Contemporary Literature* (Holt), a book in which Stuart P. Sherman has included a number of articles written during the last few years which have excited a good deal of attention. As a collection the book has something of an accidental character, but its general tenor is perfectly plain. It is an application of what may be called a classical, a standard, a rational, view of literature to the fiction of the present. Professor Sherman is opposed to Mr. Dreiser and Mr. Wells; he is in sympathy with James and Meredith; he can see the good in a modern novelist like Arnold Bennett, and the badness of an old crusted conservative like Alfred Austin; he finds the real thing in Shakespeare. That school of criticism which has been chiefly represented in this country by the work of P. E. More, Irving Babbitt and W. C. Brownell has now another effective weapon. Quite a different view is to be found in J. E. Spingarn's *Creative Criticism* (Holt). Mr. Spingarn's general position in criticism has been known for a good while; in fact a good deal of this book has been in print before. It is well, however, that we should have it all put together in one volume, for it constitutes a good statement of theory. Amy Lowell's *Tendencies in Modern American Poetry* (Macmillans), which has been already mentioned, is interpretation rather than criticism (if one likes to make a difference); it is clearly the statement of one who knows and sympathizes with the aims and ideas of certain of the present poets in America. Miss Lowell understands the new poetry and wishes to present it to the world. Naturally she approves of it, thinks it good, but these feelings on her part do not exactly constitute criticism in the sense in which most people would use the word. This is not a very important matter, however, and does not take from the value of the book, which, as has been seen, is a most useful clue in the present maze of current poetry. Clayton Hamilton's *Problems of a Playwright* (Holt) is the excellent work of a capable critic already well known. Mr. Hamilton has the advantage of really understanding the theatrical standpoint, so that he can offer more in the way of interpretation than he could otherwise do. A different sort of theatrical criticism, but equally useful, is that of J. K. Towse in *Sixty Years of the Theatre* (Funk & Wagnalls). The author was for a long time critic of the New York *Evening Post*. It is not so much our custom to reprint current dramatic criticism as it is in Paris, for instance, but a certain amount of publishing is good both for journalism and literature. Of the literature that would come more properly under the head of "essays" should be noted David Grayson's *Great Possessions* (Doubleday, Page), a book on the familiar circumstances of country life, and Charles S. Brooks's *There's Pippins and Cheese to Come* (Yale University Press).

Biography.—There are many good biographies, especially of great Americans. The most noteworthy contribution to the history of literature is *Audubon the Naturalist: A History of his Life and Time*, by Francis H. Herrick (Appletons). This is definitive of one of the most distinguished and interesting figures of our art and literature. It is founded on a great mass of original material and developed and illustrated in a very complete and satisfactory way. Based also upon a great range of original material is the *Life and Letters of Edward Everett Hale*, by his son, the present writer (Little, Brown). Dr. Hale was one of the most characteristically American figures of the nineteenth century, and this record of his life seeks to give an idea of the breadth of his personality and the range of his interests and accomplishments. *The Life, Art, and Letters of George Inness*, by his son George Inness, Jr. (Century), gives a long-needed authoritative account of the foremost figure in American landscape painting. John S. Clarke's *Life of John Fiske* (Houghton, Mifflin) gives a personal view of an important thinker and historian of about the same time. James G. Pyle's *Life of James J. Hill* (Doubleday, Page) is of a later figure, one of the characteristic Americans of later years, a great captain of industry. Joseph F. Daly's *Life of Augustin Daly* is an account of a very interesting and significant man. Mr. Daly was the representative figure in the American theatre for the last generation, and this life by his brother has much of the authority and character of an autobiography. *The Life of Joseph H. Choate*, by Theron G. Strong (Dodd, Mead), does not offer itself as a complete and authoritative account, but it is written by a man of literary ability who not only knew Mr. Choate well but is also a leader in his profession. Several autobiographies, or more properly volumes of reminiscence, are especially noteworthy. Most interesting probably is *Mark Twain's Letters*, edited by A. B. Paine (Harpers), a collection of singularly original and unconventional letters of our great humorist and philosopher. Another attractive book is *These Many Years*, by Brander Matthews (Scribners). Mr. Matthews has long been an eminent student and critic of the drama and the theatre, and his book gives something of a record of his long activity as well as the quality of his engaging personality. In *A Son of the Middle Border* (Macmillans) Hamlin Garland has given an account of the first half of his life, from his early days in the Wisconsin farm lands in the years following the Civil War to his beginnings and first successes in literature.

Necrology.—There have died during the year Hamilton Wright Mabie, long known and loved as critic, essayist and editor, Dec. 31, 1916; Franklin B. Sanborn, the last of the great Concord group, Feb. 24; J. J. Piatt, still best known for his early poems, Feb. 16; Ruth McEnery Stuart, whose stories of life in the South were well known, May 6; William J. Lampton, who used to call himself the "father of free verse" by virtue of his experiments in newspaper poetry, May 30; and William Winter, the really great theatrical and dramatic critic, June 30.

MODERN LANGUAGES AND LITERATURE

ENGLISH LANGUAGE AND LITERATURE

Albert C. Baugh

English Philology.—In the *Flügel Memorial Volume*, published by Stanford University, is printed an unpublished paper of Flügel's on "The History of English Philology". In the same volume H. Hilmer considers the origin of speech sounds in "The Main Source of Speech-sounds and the Main Channels of their Spread". *Linguistic Change* is the title of a study by E. H. Sturtevant. C. M. Lotspeich continues his study of ablaut in "A Theory of Ablaut" (*JEGP.*[1]). Studies involving general Germanic conditions are R. M. Ihrig's *The Semantic Development of Words for "walk, run" in the Germanic Languages*, E. H. Sehrt, *Zur Geschichte der westgermanischen Konjunktion "und"*, and F. A. Wood, "Etymological Notes" (*MLN.*). Professor Bright has prepared a new edition of his *Anglo-Saxon Reader*. Prof. O. F. Emerson has treated "The Old French Diphthong *ei* (*ey*) and Middle English Metrics" (*RR.*), and has published notes on "*Afterdiner, Aftermete, Aftersopen*", "*Treson*" and "*Iraland*" (Alfred's *Orosius*, I, 1), all in *Modern Language Review*. A. G. Kennedy's "French Culture and Early Middle English Forms of Address" (*Flügel Mem. Vol.*) and J. L. Barker's "End Consonants and Breath-Control in French and English" (*MP.*) deal with Anglo-French linguistic relations. J. M. Steadman, Jr., has studied "The Origin of the Historical Present in English" (*SP.*).

Old English Literature (449-1150).—"The Beginnings of Poetry" by Louise Pound (*PMLA.*) may best be mentioned here. Oscar L. Olson has worked out *The Relation of the Hrólfs Saga Kraka and the Bjarkarímur to Beowulf*, and other Beowulf items are treated by H. M. Ayres, "The Tragedy of Hengest in *Beowulf*" (*JEGP.*), Alexander Green, "An Episode in Ongentheow's Fall" (*MLR.*), G. W. Mead, "Withergyld of *Beowulf*, 2051" (*MLN.*), and L. M. Hollander, "*Beowulf* 33" (*ibid.*). The Finn episode, too, has had considerable attention. American contributions are Alexander Green, "The Opening of the Episode of Fin in *Beowulf*" (*PMLA.*) and N. S. Aurner, "An Analysis of the Interpretations of the Finnsburg Documents" (*Univ. of Iowa Monogr.*). The *Caedmon Poems* have been translated by C. W. Kennedy, and K. Sisam has a note on "The Caedmonian *Exodus* 492" (*MLN.*). Ruth Perkins writes "On the Sources of the *Fata Apostolorum*" (*MLN.*), and G. H. Gerould takes up "The Old English Poems on St. Guthlac and their Latin Source" (*ibid.*). Cook's review of Browne's *Ancient Cross Shafts at Bewcastle and Ruthwell* (*MLN.*) deserves mention. Incidentally it may be very well noted that the progress of *Old English Scholarship in England from 1566-1800* has been traced by E. N. Adams.

Middle English Literature (1150-1500).—The Middle-English period has been the subject of much recent activity. By far the most important contribution of the year is Carleton Brown's epoch making *Register of Middle English Religious and Didactic Verse*, of which Part I ("List of Manuscripts") has been issued by the London Bibliographical Society. Part II, containing indexes and references, is promised for early publication. One of Professor Brown's students, F. A. Foster, has completed her edition of *The Northern Passion* for the Early English Text Society. Frances L. Gillespy has published *Layamon's Brut: A Comparative Study in Narrative Art* (*Univ. of Cal. Publ.*). J. Hinton is the author of two careful articles on Walter Map, "Walter Map's *De Nugis Curialium:* Its Plan and Composition" (*PMLA.*), and "Walter Map and Ser Giovanni" (*MP.*). In the field of the romance reference must be made to the long and painstaking review by Lucy M. Gay of the *Vulgate Version of the Arthurian Romances* (*MP.*). W. C. Curry has sought to recreate *The Middle English Ideal of Personal Beauty*, as found in the metrical romances, etc. R. S. Loomis has made especially his own the study of plastic representations of scenes from the romances. The longest of his studies is *Illustrations of Medieval Romance on Tiles from Chertsey Abbey* (*Univ. of Ill. Stud.*), and this may be supplemented by his "The Tristran and Perceval Caskets" (*RR.*) and an article on Galahad in *Art in America.* He has also published "Verses on the Nine Worthies" (*MP.*), supplementary to the texts presented by Gollancz. Margaret P. Medary has investigated the "Stanza-Linking in Middle-English Verse," especially the romances, and Arthur C. L. Brown has completed the study by an article "On the Origin of Stanza-Linking in English Alliterative Verse" (both in *RR.*). Professor Brown has also discussed "From Cauldron of Plenty to Grail" (*MP.*). The grail legend is treated by L. A. Fisher in *The Mystic Vision in the Grail Legend and Divine Comedy.* J. C. Hodges, "Two Otherworld Stories" (*MLN.*), and R. S. Loomis, "A Phantom Tale of Female Ingratitude" (*MP.*), touch the romance less closely. On turning to the saints' legends, we may note a suggestive article by G. H. Gerould on "The Legend of St. Wulfhad and St. Ruffin at Stone Priory" (*PMLA.*). Hope Emily Allen has published "The *Speculum Vitae;* Addendum" (*PMLA.*) and "A Note on the Proverbs of Prophets, Poets, and Saints" (*MP.*). A number of miscellaneous topics in Middle-English literature have been treated: L. B. Hessler, *Latin Epigrams of the Middle-English Period;* J. M. McBryde, Jr., "Some Medieval Charms" (*Sewanee Rev.*); E. P. Hammond, "A Manuscript Perhaps Lost" (*MLN.*); and R. Wallerstein, *King John in Fact and Fiction.* An exhaustive paper by A. Taylor, "Dane Hew, Monk of Leicester" (*MP.*) traces the diffusion of a widespread folk tale. Two studies have appeared concerning *Piers Plowman*, T. A. Knott's "Observations on the Authorship of *Piers the Plowman*" (*MP.*) and J. H. Hanford's "Dame Nature and Lady Life" (*MP.*). Two short collections of ballads have been edited by W. M. Hart and G. H. Stempel, respectively, and "The Influence of Transmission on the English Ballads" has been studied by J. R. Moore (*MLR.*). J. M. Berdan has traced "The Influence of the Medieval Latin Rhetorics on the English Writers of the Early Renaissance" (*RR.*). The early drama has received considerable attention. P. E. Kretzmann has published a valuable monograph on *The Liturgical Element in the Earliest Forms of the Medieval Drama.* J. K. Bonnell, "The Easter *Sepulchrum* in its Relation to the Architecture of the High Altar" (*PMLA.*), C. B. C. Thomas, "The Miracle Play at Dunstable" (*MLN.*), Hardin Craig, "The Pater Noster Play" (*Nation*), G. A. Jones, "A Play of Judith" (*MLN.*) and W. K. Smart, "*Mankind* and the Mummer's Plays" (*MLN.*), all concern intimately the early drama.

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[1] Periodicals are cited under the following abbreviations: *MLN., Modern Language Notes; MLR., Modern Language Review; MP., Modern Philology; PMLA., Publications of the Modern Language Association of America; JEGP., Journal of English and Germanic Philology; SP., University of North Carolina Studies in Philology; RR., Romanic Review.*

Once more it is possible to speak with special satisfaction of the work of American scholars on Chaucer. Professor Kittredge has written at length on "Chaucer's Lollius" (*Harvard Stud. in Class. Phil.*) and in a short article has queried "Lewis Chaucer or Lewis Clifford?" (*MP.*). J. L. Lowes in a communication to the *Nation* announced certain views concerning Chaucer's use of French translations of Latin classics. He has also discussed "Chaucer and Dante" (*MP.*) and "The Second Nun's Prologue, Alanus, and Macrobius" (*ibid.*). Professor Cook has written in detail of *The Last Months of Chaucer's Earliest Patron* (*Trans. Conn. Acad.*) and has contributed "Chauceriana" to the *Romanic Review.* R. K. Root's *The Textual Tradition of Chaucer's Troilus* appeared in 1916. Root has also discussed "Chaucer's Dares" (*MP.*). "The Troilus-Cressida Story from Chaucer to Shakespeare" (*PMLA.*) is the title of a paper by H. E. Rollins. H. B. Hinckley treats "The Debate on Marriage in the Canterbury Tales" (*PMLA.*). S. B. Hemingway makes brief contributions on "Chaucer's Monk and Nun's Priest" and "The Two St. Pauls" of Chaucer's *Pardoner's Prologue* (both in *MLN.*). I. C. Lecompte collates "Chaucer's *Nonne Prestes Tale* and the *Roman de Renard*" (*MP.*) and B. L. Jefferson works out the connection between *Chaucer and the Consolation of Philosophy of Boethius.* E. P. Kuhl has published his conclusions regarding "Chaucer's Burgesses" (*Trans. Wis. Acad.*). M. H. Shackford has made a suggestion in connection with "The Date of Chaucer's *House of Fame*" (*MLN.*) and M. L. Brown has made clearer the resemblances between "The *House of Fame* and the *Corbaccio*" (*MLN.*). "The Sources of Chaucer's *Parlement of Foules*" are studied by W. E. Farnham (*PMLA.*). Finally we may gather together here a few minor notes: J. S. P. Tatlock's note on "The Marriage Service in Chaucer's *Merchant's Tale*" (*MLN.*), his "Puns in Chaucer" (*Flügel Mem. Vol.*), P. F. Baum's "Notes on Chaucer" (*MLN.*), and J. Q. Adams' "William Goddard" (*MLN.*).

Modern English Literature (since 1500).—Spenser has been the subject of several articles in the journals. J. B. Fletcher has called his study "The Painter of the Poets" (*SP.*), and C. G. Osgood has written on "Spenser's Sapience" (*ibid.*). O. F. Emerson has argued the question of "Spenser, Lady Cary and the *Complaints* Volume" (*PMLA.*) and contributed a note on "A New Word in an Old Poet" (*MLN.*). P. W. Long has considered "Spenser and the Bishop of Rochester" (*PMLA.*) and "Spenser's Visit to the North of England" (*MLN.*). F. M. Padelford's "The Women in Spenser's Allegory of Love" (*JEGP.*) also deserves mention. For other Elizabethans, outside the drama, there is less to record. "The Italian Lyrics of Sidney's *Arcadia*" is the title of an article by Clarence Stratton (*Sewanee Rev.*). R. M. Alden has a paper on "The Lyrical Conceit of the Elizabethans" (*SP.*). Lyly's *Euphues* has been critically edited by M. W. Croll and H. Clemons. Finally we may record H. E. Rollin's "Notes on Thomas Deloney" (*MLN.*).

Turning to Shakespeare and the Elizabethan drama, we may first note four studies of the theatre and stage. J. Q. Adams, Jr., has published an admirable volume on the *Shakespearean Play-houses*, in which he reexamines the documents and studies the 22 regular and projected theatres of Shakespeare's time. He has also investigated "The Conventual Buildings of Blackfriar's, London, and the Playhouses Constructed Therein" (*SP.*). T. S. Graves has published "'Playing in the Dark' During the Elizabethan Period" and "Notes on Elizabethan Theatres" (both in *SP.*).

Shakespearean literature presents its usual bewildering profusion. H. H. B. Meyer has compiled *A Brief Guide to the Literature of Shakespeare.* E. Greenlaw writes on "Shakespeare's Pastorals" (*SP.*) and H. D. Gray on "Shakespeare's Last Sonnets" (*MLN.*). M. P. Tilley reconciles "Shakespeare and Italian Geography" (*JEGP.*), F. M. Padelford distinguishes "The Gothic Spirit in Shakespeare" (*So. Atlan. Quart.*), and S. P. Sherman discloses "The Humanism of Shakespeare" (*Nation*). William Winter has published a third series of his *Shakespeare on the Stage,* and J. M. Manly considers "Cuts and Insertions in Shakespeare's Plays" in the light of Shakespeare's versification (*SP.*). B. L. Schafer offers "A Study of the Three Unities in Shakespeare's Representative Plays" (*Sewanee Rev.*), and R. A. Law writes "On the Structure of Certain Shakespeare Plays" (*Texas Rev.*). The University of Texas has published *A Memorial Volume to Shakespeare and Harvey* containing contributions by Professors Manly, Bright, Barrett Wendell, etc. H. D. Gray in "The Authorship of *Titus Andronicus*" (*Flügel Mem. Vol.*) proposes the Shakespearean authorship of the play with revision by other men. Individual plays are also treated by A. R. Brubacher, *Shakespeare's King Richard III;* H. D. Gray, "The Purport of Shakespeare's Contribution to *1 Henry VI*" (*PMLA.*); Wm. Chislett, Jr., "On Shakespeare's *Julius Cæsar*" (*Flügel Mem. Vol.*); and J. H. Hanford, "A Platonic Passage in Shakespeare's *Troilus and Cressida*" (*SP.*). Tucker Brooke offers an interpretation of "Hamlet's Third Soliloquy" (*SP.*), which is opposed by S. A. Tannenbaum's, "Hamlet Prepares for Action" (*ibid.*). Similarly, M. W. Croll makes "A Suggested Emendation" to *1 Henry IV*, II.iv.133ff. which is answered by J. S. Kenyon's "The 'Sow's Tale'" (both in *Nation*). Other textual notes are M. P. Tilley's "A Good Kissing Carrion" to *Hamlet*, II.ii.182 (*MLR.*) and H. D. Gray's "Antony's Amazing 'I Will to Egypt'" (*MP.*). Finally, attention may be directed very briefly to a few more general titles: H. B. Sprague, *Studies in Shakespeare;* R. A. Law, "Shakespeare in Puritan Disguise" (*Nation*); *Papers on Playmaking*, published by the Dramatic Museum of Columbia University; A. W. Crawford, *Hamlet, an Ideal Prince and other Essays in Shakespearean Interpretation;* and J. W. Postgate, *Homage to Shakespeare.*

Three plays of Ben Jonson have been edited in the Yale Studies: *Every Man in His Humour*, by H. H. Carter; *Catiline, His Conspiracy*, by L. H. Harris; and *The Case Is Altered*, by W. E. Selin. T. S. Graves briefly discusses "Jonson's *Epicoene* and Lady Arabella Stuart" (*MP.*), W. D. Briggs connects "*Cynthia's Revels* and Seneca" (*Flügel Mem. Vol.*). Briggs also continues his search for Jonson's sources in "Source-Material for Jonson's *Epigrams* and *Forest*" (*Classical Phil.*) and "Source-Material for Jonson's *Underwoods* and Miscellaneous Poems" (*MP.*). The University of Pennsylvania has issued the first series of its *Studies in English Drama.* The volume contains A. Gaw, "Tuke's Adventures of Five Hours, in Relation to the 'Spanish Plot' and to John Dryden"; R. Jewell, "Heywood's Faire Maid of the West"; J. L. Carver, "The Valiant Scot, by J. W."; C. C. Gumm, "Sir Ralph Freeman's Imperiale"; C. Stratton, "The Cenci Story in Literature and in Fact"; and M. G. McCaulley, "Function and Content of the Prologue, Chorus, and Other Non-Organic Elements in English Drama". The present writer has edited William Haughton's *Englishmen for My Money, or A Woman Will Have Her Will.* E. D. Adams prints "A Fragment of a Lord Mayor's Pageant" (*MLN.*), E. C. Dunn discusses "John Rastell and *Gentleness and Nobility*" (*MLR.*), and E. B. Daw is the author of two papers concerned with minor items—"*Love Fayned and Unfayned* and the English Anabaptists" (*PMLA.*) and "Two Notes on *The Trial of Treasure*" (*MP.*). Various suggestions of the sources of individual plays have been made or examined. E. R. Macauley prints "Notes on the Sources for Medwall's *Nature*" (*MLN.*), Tucker Brooke writes "On the Source of *Common Conditions*" (*MLN.*), W. D. Briggs, "On the Sources of *The Maid's Tragedy*" (*MLN.*), and W. G. Stanard on a source of *Edward III* in "Edward III and the Countess of Salisbury" (*Nation*). C. W. Lemmi is the author of a brief note on "*Tamburlaine* and Greene's *Orlando Furioso*" (*MLN.*) and J. J. Parry writes of "A New Version of Randolph's *Aristippus*" (*ibid.*). C. R. Baskerville concludes his presentation of "Some Evidence for Early Romantic Plays in England" (*MP.*) and has added a supplementary note on "An Elizabethan Eglamour Play" (*ibid.*). *The Early Romantic Drama at the English Court* is the title of a dissertation by L. M. Ellison. Karl Young has written of "William Gager's Defence of the Academic Stage" (*Trans. Wis. Acad.*) and R. M. Alden in "The Invasion of Tragedy by Comedy" (*Texas Rev.*) has supplemented an earlier article (*JEGP.*, xiii). Two phases of verse structure have received attention in F. G. Hubbard's "A Type of Blank Verse Line Found in the Earlier Elizabethan Drama" (*PMLA.*) and C. W. Cobb's "A Further Study of the Heroic Tetrameter" (*MP.*).

Later seventeenth- and eighteenth-century verse is much neglected. It is strange that Milton has attracted so few scholars. J. H. Hanford has written on "The Dramatic Element in *Paradise Lost*" (*SP.*) and E. C. Baldwin has "A Note on *Paradise Lost* IX" (*MLN.*). "The Temptation in *Paradise Regained*" (*JEGP.*) by A. H. Gilbert and the edition of "Of Reformation Touching Church-Discipline in England" by W. T. Hale are the only other Milton items of any extent. H. M. Ayres writes of "Chapman's *Homer* and Others" (*Nation*), E. B. Reed prints "Two Seventeenth Century Hunting Songs" (*MP.*), and J. J. Parry has edited *The* [*Selected*] *Poems and Amyntas of Thomas Randolph.* C. A. Moore asks "Did Leibniz Influence Pope's Essay?" (*JEGP.*). C. S. Northup has issued his *Bibliography of Thomas Gray,* and J. P. Kaufman quotes "Stockdale on Gray's Productivity" (*MLN.*). "The Two Versions of Grongar Hill" are treated by G. Greever (*JEGP.*). More general in its scope is C. A. Moore's "The Return to Nature in English Poetry of the Eighteenth Century" (*SP.*), and rather intensive is H. A. Burd's *Joseph Ritson: A Critical Biography.*

The post-Restoration drama has been treated in R. Wright's *Political Play of the Restoration.* R. S. Forsythe has completed his *Study of the Plays of Thomas D'Urfey, with a reprint of "A Fool's Preferment"* (*Western Reserve Stud.*), J. T. Hillhouse has edited Fielding's most successful play, *The Tragedy of Tragedies*, and S. T. Williams has published a volume on *Richard Cumberland: his life and dramatic works.* H. L. Bruce lists additional "English Adaptations of Voltaire's Plays" (*MLN.*), and Miss L. B. Campbell considers "The Rise of a Theory of Stage Presentation in England during the Eighteenth Century" (*PMLA.*).

English fiction has been studied by A. J. Tieje in *The Theory of Characterization in Prose Fiction prior to 1740.* H. J. Savage has discussed "The Beginnings of Italian Influence in English Prose Fiction" (*PMLA.*). H. S. Hughes devotes considerable space to "An Early Romantic Novel" by one Mary (Mitchell) Collyer (*JEGP.*). Miscellaneous prose of the eighteenth century has been treated by Dorothy Foster, "The Earliest Precursor of Our Present-Day Monthly Miscellanies" (*PMLA.*), and C. N. Greenough, "The Development of the *Tatler* Particularly in Regard to News" (*ibid.*). P. H. Houston writes of "Some Contemporary Criticism of Dr. Johnson" (*Texas Rev.*), E. N. S. Thompson examines "The Discourses of Sir Joshua Reynolds" (*PMLA.*) and discusses "Tom Brown and Eighteenth-Century Satirists" (*MLN.*). S. C. Chew finds "An English Precursor of Rousseau" (*MLN.*) and W. H. Graves, in *Junius Finally Discovered,* argues for Paine's authorship of the *Letters.*

Lack of space prevents more than a brief treatment of the later periods of English literature. Mention may be made of Neilson's *Burns: How to Know Him;* notes on Byron and Keats (*MLN.*), and L. N. Broughton's *Concordance to the Poems of Keats.* C. T. Winchester has published *Wordsworth: How to Know Him,* W. H. Vann records "Two Borrowings of Wordsworth" (*MLN.*), G. M. Harper writes of "Wordsworth at Blois" (*Texas Rev.*), and E. L. Bradsher discusses "The First American Edition of the Lyrical Ballads" (*So. Atlan. Quart.*). "Rossetti's *House of Life*" is the subject of a paper by F. M. Tisdel (*MP.*). A Hazlitt item is recorded by J. Zeitlin, "Philosophy for Schoolboys" (*Nation*), and Matthew Arnold should be studied in S. P. Sherman's *Matthew Arnold: How to Know Him* and Irving Babbitt's review in the *Nation.* R. M. Alden has published in the same series *Alfred Tennyson: How to Know Him,* and E. M. Robinson has written a thesis on *Tennyson's Use of the Bible.* F. E. Pierce follows "The Hellenic Current in English Nineteenth-Century Poetry" (*JEGP.*), and M. R. Thayer traces *The Influence of Horace on the Chief English Poets of the Nineteenth Century.* In *The Naming of Charac-*

ters in the Works of Charles Dickens E. H. Gordon treats a rather obvious subject. Stevenson has received several treatments including R. H. Rice's *Stevenson: How to Know Him*, G. S. Hellman's edition of *Poems Hitherto Unpublished*, and E. C. Knowlton's "A Russian Influence on Stevenson" (*MP.*). The modern novel receives attention in A. P. Webb's *Bibliography of the Works of Thomas Hardy, 1865-1915*, R. P. Utter's "The Work of Thomas Hardy" (*Sewanee Rev.*), S. P. Sherman's "The Aesthetic Idealism of Henry James" (*Nation*), and Wilson Follett's "A New View of De Morgan" (*Yale Rev.*). In the later poetry we may note A. E. Trombly's article on "The Poetry of A. E." (*Texas Rev.*), J. E. Meeker's volume on *The Life and Poetry of James Thomson* ("*B. V.*") and H. Fineman's *John Davidson: A Study of the Relations of His Ideas to His Poetry.* In the drama two very good books have appeared, T. H. Dickinson's *The Contemporary Drama of England* and E. A. Boyd's *The Contemporary Drama of Ireland.* L. R. Morris's *The Celtic Dawn, a Survey of the Renaissance in Ireland, 1889-1916* is a slighter work. E. H. Bierstadt has issued a volume on *Dunsany the Dramatist*, and W. L. Sowers treats the same writer in "A New Influence in Our Theatre" (*Texas Rev.*). Mention may be made of R. Burton's *Bernard Shaw, the Man and the Mask.*

A few books of a more general character may complete this survey. In criticism W. C. Brownell has published a volume called *Standards*, J. E. Spingarn one which he calls *Creative Criticism*, and Gertrude Buck has written on *The Social Criticism of Literature. The Rhythm of Prose* has been investigated by W. M. Patterson, and "Cadence in English Prose" by F. M. Foster. Assuredly there is no decrease in the production of American scholars during the past year.

GERMANIC LANGUAGES AND LITERATURE

DANIEL B. SHUMWAY

German Literature.—The fact that the United States for the greater part of the year has been engaged in war with Germany has naturally resulted in far less activity in translating from the German than heretofore. In the field of philology and literary criticism, however, there are fully as many excellent articles as before the war.

In the field of drama and fiction the English edition of Gerhard Hauptmann's works has been continued by the publication of the seventh volume, containing *Elga* and *The Bow of Odysseus*, translated by Ludwig Lewisohn, and the *Commemoration Masque* (*Festspiel*) by G. B. Q. Morgan. Excellent translations of four plays of the Austrian dramatist Arthur Schnitzler (*The Hour of Recognition, The Big Scene, The Festival of Bacchus* and *His Helpmate*) have appeared under the title *Comedies of Words*, with an introduction by Pierre Loving (Stewart & Kidd); see W. Haynes, "Arthur Schnitzler, Dramatist of Psycho-analysis" in the *Dial* (July 19, p. 63). Hugo von Hofmannthal's play *Everyman*, based on the old English morality play, has been rendered into English blank verse by G. Sterling and R. Ordynski (Robertson). Frank Wedekind is represented by the fifth edition of his powerful tragedy, the *Awakening of Spring* (N. L. Brown), and by a translation of his *Pandora's Box* (Shay). Steiger has reprinted a number of the amusing comedies of R. Benedix: *Günstige Vorzeichen, Die Hochzeitsreise, Die Lügnerin, Ohne Pass* and *Die Phrenologin*, and also *Paulas Geheimnis* by Oscar Blumenthal and *Die Schulreiterin* by E. Pohl. Joseph Wiehr has discussed Carl Hauptmann's *Verhältnis zur Heimatkunst* (*Jour. Eng. and Ger. Phil.*, April, p. 226. Nor have the classical dramatists been forgotten. Lessing's *Minna von Barnhelm* has been translated by Otto Heller (Holt), *Nathan der Weise* by Patrick Maxwell, with an introduction by George Kohut (Bloch). J. T. Hatfield discusses "Lessing's Feeling for Classic Rhythms" (*Jour. Eng. and Ger. Phil.*, April, p. 187) and Brander Matthews deals with Lessing in an article "Three Theorists of the Theatre" (*Art World*, April, p. 24). Goethe is represented only by an article by Julius Goebel, "Traces of the Wars of Liberation in Goethe's Faust"

(*Jour. Eng. and Ger. Phil.*, April, p. 195), and Schiller by an interesting article by F. W. C. Lieder on "Bayard Taylor's Adaption of Schiller's Don Carlos" (*ibid.*, Jan., p. 27). The purpose of the German drama in the sixteenth and seventeenth centuries is the subject of an able article by Jos. E. Gillet in the *Publications of the Modern Language Association* (Sept., p. 430).

For the first time in many years no German novel has been translated, and only a brief notice of Johann Stilgebauer's war novel *Inferno*, which was forbidden in Germany, has been given in the *Review of Reviews* (Feb., p. 207). L. M. Price in an article "Karl Gutzow and Bulwer Lytton" (*Jour. Eng. and Ger. Phil.*, July, p. 397) has shown that Gutzow was not so dependent on Lytton as Julian Schmidt would have us think.

In the field of lyric poetry A. W. G. Randall has interestingly discussed "German War and the German Poets" (*Contemporary Rev.*, June, p. 747) and translated poems of Hauptmann, Sudermann, Dehmel, Lissauer, Fritz von Unruhe and others. F. W. Herzberger has published a timely volume of *Luther Songs and Ballads* with a biographical account of the great reformer. That the interest in Heinrich Heine never seems to wane is shown by the translation of 325 of his poems by Louis Untermyer (Holt). An interesting experiment has been made by A. Gray (*Living Age*, Jan., p. 194), who has rendered three of the best known of Heine's lyrics into Scotch dialect verse, with a result that is quaint, pretty and altogether charming.

The field of literary criticism is well represented. O. H. Werner discusses the question of the *Unmarried Mother in German Literature* (*Columbia Univ. Press*), E. F. Clark treats of the "Grobianus of Hans Sachs and its Predecessors" (*Jour. Eng. and Ger. Phil.*, July, p. 390). N. C. Brooks describes the "Hans Sachs Stage" (*ibid.*, April, p. 208). Goethe's ideas of the human race and its capabilities are discussed by John F. Coar in an article entitled "Goethe's Philanthropy" (*Germanistic Soc. Quart.*, March, p. 1). J. F. Haussmann shows "E. T. A. Hoffmann's Influence on Haupt" (*Jour. of Eng. and Ger. Phil.*, Jan., p. 53), and Cecil A. Moore, in "Did Leibniz Influence Pope's Essay on Man?" (*ibid.*, Jan., p. 84), denies that the influence was in any way direct. G. P. Jackson continues his studies of the "Rhythmic Form of the German Folk Song, *Mod. Phil.*, June, p. 79), treating of the various strophic forms. T. F. Crane gives the "External History of the *Kinder and Hausmärchen* of the Brothers Grimm" (*ibid.*, June, p. 65).

German Philology.—In the general field of philology E. Prokosch, "*Die deutsche Lautverschiebung und die Völkerwanderung*" (*Jour. of Eng. and Ger. Phil.*, Jan., p. 1), tries to show, contrary to the general belief, that the contact of the Teutons with foreign nations put an end to the Germanic sound shift. Most interesting is the ingenious attempt of C. M. Lotspeich ("*A Theory of Ablaut*", *ibid.*, April, p. 173) to prove that the qualitative ablaut is due to difference of stress and is therefore really quantitative. Hermann Collitz discusses the "Ablaut of Gothic *speiwan*" (*Mod. Phil.*, June, p. 103), showing by Sanskrit parallels that it is an old word of the first ablaut class. T. W. J. Heuser, under the title "*Deutsche Sprachreinigung*" (*Germanistic Soc. Quart.*, March, p. 26), gives an interesting review of the attempts to supplant foreign words by native ones in German. In an article on "Culture and Kultur from the Viewpoint of a Philologist" (*Educ. Rev.*, March, p. 227) the same scholar discusses the difference between the German and English words. The older period is represented by an article by C. N. Gould on the "Syntax of *at* and *ana* in Gothic, Old Saxon and Old High German" (printed privately). Joseph Wright has rewritten and enlarged his *Middle High German Primer* for the third edition (*Oxford Univ. Press*).

German Texts and Teachings.—In the field of German texts J. L. Kind has continued his editions of Grillparzer's plays by one of *Sappho* (*Oxford Univ. Press*). Rudolph Herzog's interesting novel *Die Burgkinder* has been abridged and edited by O. G. Boetzkes (Heath). A new edition of

Goethe's *Hermann und Dorothea* has been prepared for the Oxford series by F. W. C. Lieder. O. Burkhard has compiled *German Poems for Memorizing* (Holt). Two new editions of Paul Heyse's ever popular tale *L'Arrabbiata* have been published and a literal translation made by V. E. Lyon. German readers have been prepared by E. W. Roessler, F. E. Bell, P. S. Allen and P. Scherer, and a science reader by F. W. Scholz (*Macmillans*). The following German grammars have been issued: M. P. Whitney and L. L. Stroebe, *Brief Course in German* (Holt), R. W. Huebsch and R. F. Smith, *Progressive Lessons in German* (Heath), M. H. Haertel and G. C. Cast, *Elements of German Grammar for Review* (Heath). Deserving of special mention is *A First German Book* by Frederick Betz and W. R. Price (Am. Book Co.) after the direct method, in which each lesson is based on a carefully chosen anecdote calculated to hold the attention of the pupil. In the field of pedagogy C. H. Handschin has discussed the "Study of German during the War" (*School and Society*, Sept., p. 253).

Scandinavian.—In the general Scandinavian field G. T. Flom has published "Studies in Scandinavian Paleography" (*Jour. Eng. and Ger. Phil.*, July, p. 416). In the Swedish field the most important event is the publication of Selma Lagerlöf's works in a nine-volume translation (Doubleday Page). To accompany the edition the publishers have had H. E. Maule prepare an account of the author under the caption *Selma Lagerlöf, the Woman and Her Message.* August Strindberg's *Married* has appeared in the Modern Library of the World's Best Books (Boni & Liveright). The most talked of Swedish poet of the year has been the Nobel Prize winner, Karl Gustav Werner von Heidenstam, whose work has been the subject of several articles by C. W. Stork (*Nation*, Nov. 30, 1916; *Bookman*, Feb., p. 589; *Independent*, April 2, p. 26), which are illustrated by admirable translations of several of his poems. He has been treated also by Svea Bernhard (*Poetry*, April, p. 35), who points out that he is as popular as Lagerlöf and that the literary renascence in Sweden begins with him. C. W. Stork has given fresh proof of his ability as a translator by issuing a volume of selections from the best Swedish lyricists under the title *Anthology of Swedish Lyrics.* Maret Michelet has written in Swedish a brief survey of Mathilde's Wergeland's life under the title *Glimt fra Agnes Mathilde Wergelands liv* (Free Book Concern). Swedish tales have been published, one *Oberst Heg og hans Gutter* by W. T. Ayrer (Fremad), and others under the title *Vildros, ett nytt Knippe* by Carl A. Lönnquist (Augustana Book Concern).

In the Norwegian field the popularity of Ibsen is evinced by new translations of his plays. His *Doll's House, Ghosts* and *Enemy of the People* appear in the Modern Library of the World's Best Books. Dutton has issued a volume containing Ibsen's *Pretenders* and other plays. Signs of the increasing attention paid to the study of Norwegian in American schools are a school edition of Björnsen's *En Glad Gut* which has been prepared by J. A. Holvik (Augsburg Publ. Concern), and an edition of a German translation of Ibsen's *Ein Volksfeind* by J. L. Blyesen (Oxford Univ. Press). Doran has published an authorized translation of Jörgensen's *Klokke Roland* under the title *False Witness.*

Two translations from the Danish have appeared, one by Ingeborg Lund of the stirring experiences in the German army of a Schleswig Dane, Erich Erichsen, under the title *Forced to Fight* (Robert McBride), the other a compilation from war time sermons of German clergymen made by J. P. Bangs and translated by Jessie Bröchner under the caption *Hurrah and Hallelujah* (Doran).

ROMANCE LANGUAGES AND LITERATURE

BENJAMIN P. BOURLAND

American Contributions.—The effect of the war upon the output of Roman scholarship in the United States is more and more apparent with each year. Inaccessibility of sources, lack of the inspiration that is won only by free and constant intercourse with the best minds of Europe, and the diversion of men from scholarly to other fields of exertion have affected as well the quantity as the quality of the work produced.

French.—Miss LeDuc's study of Gontier Col is a real contribution to the history of humanism in France. Thieme has published a major treatise on the history of French verse. Fisher's edition of Pierre de Beauvais' *Vie de St. Eustache* is the principal publication in the field of Old French. Stacpoole's *François Villon* has qualities that make it welcome in a subject excellently treated heretofore.

Note should perhaps be made of the fact that numerous manuals have been issued during the year for the help of Americans in the various services in France. A few of these are good of their kind, and some are the work of scholars. None is in any sense a contribution to learning. They are mentioned here as an example of the influence of the war.

Spanish.—The tendency toward Latin America is even stronger in 1917 than in the year preceding, or it may be that 1917 has seen the publication of much matter the preparation of which dates from 1915-16. As yet we have principally text books, but in his *Literary History of Spanish America* Coester has made a beginning on the side of scholarship. In pure Castilian we note Mr. How's translation of the Lazarillo, from Foulché-Delbosc's text, with Wagner's introduction.

Italian.—The outstanding contribution in Italian is Grandgent's volume of McBride lectures, *The Ladies of Dante's Lyrics*. To be noted also is the same author's popular book on *Dante* in the Duffield series.

Necrology.—Robert Edouard Pellissier was killed in the Battle of the Somme, Aug. 29, 1916. He was born on May 12, 1882, at La Ferrière in the French Jura, came to the United States in 1896, studied at Harvard, and from 1911 was of the faculty of Leland Stanford Jr. University, where he was still assistant professor at the time of his death. When the war broke out he was one of the first to sail to France and join the army to serve his native land. He first served as a private, then as sergeant, lastly as lieutenant in the French army. His death, mourned greatly by his friends and colleagues, has taken from the United States a scholar of as high a promise, and a man of as distinguished a character as can be found in any part of the world. Albert Frederick Kuersteiner, since 1898 professor in the University of Indiana, died at Indianapolis on June 9, 1917, after long suffering, admirably borne. He was 51 years old. He was a ripe and sound scholar in French and Spanish, and bore a very high reputation as a teacher. William Henry Fraser, professor of Italian and Spanish in the University of Toronto, died on Dec. 28, 1916.

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ANCIENT LITERATURE AND PHILOLOGY

ANCIENT LITERATURE

(*Additions from Papyri*)

CLIFFORD H. MOORE

The year 1917, because of the war, has seen no important publications of literary papyri, strictly speaking, but there appeared in 1916, too late for notice in the last issue of the YEAR BOOK, Part XII, of the *Oxyrhynchus Papyri*, containing documents and letters. The two most important sections are those containing edicts and circular letters and documents emanating from the Senate of Oxyrhynchus, which illustrate the period from Septimius Severus to Constantine; but the whole volume sheds important light upon almost every side of life in Hellenized Egypt.

The collection opens with a rescript of Severus which throws some new light on the methods of appointing collectors of money taxes in villages. It is followed by an edict of Caracalla which shows that the local senators in the capitals of Egypt did not always conduct themselves with senatorial dignity. No. 1408 is an interesting report of a trial, closing with an edict of the prefect, relating to the suppression of brigandage. No. 1412 is the report of a special meeting of the Senate at Oxyrhynchus, called to deal with the transport of grain required by troops. Other documents illustrate the method of procedure and the subjects considered in the local Senate.

Among the rich material contained in the other sections we may mention No. 1424, the letter of a *centurio princeps* of about 318 A. D., which shows how burdensome public office had become by the fourth century. Another declaration of pagan sacrifice (1464), belonging to the Decian persecution of 250 A. D., is here presented, which differs slightly from the normal type of such declarations in that it mentions the imperial decree, *θεία κρίσις*, and indicates that the writer's family was associated with him in the declaration.

We have previously noticed the lack of Latin documents among Egyptian papyri, but we now have (1466) a request for the appointment of a guardian addressed by a woman to the prefect, Valerius Firmus, written in both Greek and Latin and dating from the year 245. The following number is a petition of the year 263 A. D. of unusual interest, for a woman here presents her claim to be confirmed in her *jus trium liberorum:* inasmuch as she possessed three children and was able to write, she claimed the right to act without a guardian and to enjoy the privileges which a man in similar position would enjoy. Her request was apparently granted. Among the personal letters, Nos. 1492-4 and 1592 have a special interest, as they are among the earliest Christian documents from Egypt, dating from the late third or early fourth century. The formulae of greeting and the pious reflections and good wishes which they all contain, show that such natural expressions had already become fixed in Christian correspondence.

There are given a number of horoscopes which will interest those concerned with ancient astrology. No. 1477 is a portion of a numbered list of questions applied to an oracle, which illustrate the large variety of trivial inquiries directed to ancient shrines. A Gnostic charm for victory (1478) and a Gnostic invocation (1566) likewise observe special mention.

We may call attention also to an article by Bignone in the *Rivista di Filologia* for April, 1917, in which he discusses in an interesting fashion an Epicurean polemic against the Stoic doctrines of providence, fate, and fortune, which has been discovered in the Herculanean Papyrus No. 1670.

GREEK LITERATURE

WILLIAM ARTHUR HEIDEL

The searching of hearts brought about by the European War has led to a thoroughgoing criticism of the aims and methods of education, and the case of the classics has found not only assailants but also admirable champions. *A Defence of Classical Education* by R. W. Livingston (Macmillans), though it is in part a plea of confession and avoidance, is in fact far more than a defence, for it contains an admirable exposition of the salient characteristics especially of Greek literature. *The Assault on Humanism* by Paul Shoey (Atlantic Monthly Co.) is a skillful counterattack by an adroit lawyer and eminent Hellenist. Here and there it gives the impression of "sniping", but on the whole the castigation which it visits on Dr. C. W. Eliot and Abraham Flexner is both fair and deserved. *Value of the Classics* (Princeton Univ. Press) is a monumental memorial of the Classical Conference held at Princeton University on June 2, 1917, containing much of interest to the student of Greek literature.

One of the most delightful books provoked by the war is *Patriotic Poetry, Greek and English*, by W. Rhys Roberts (John Murray), as showing with intent the eternal consolation of the ideal literatures of the world, to which the individual and the race have recourse in all great crises. The Germans, too, have produced books of similar character, but none of like merit. If there are those who would draw from the war the lesson of the need of greater material efficiency, others with the insight and faith of the saving remnant have seen that now more than ever arises the necessity of conserving the higher values, threatened as they have rarely been by vandalism. *The Greek Spirit* by *Kate Stephens* (Sturgis & Walton), written before the war, *Greek Ideals: A Study of Social Life*, by C. D. Burns (Macmillans), and numerous essays in the periodicals seek to enforce the ideals of ancient Greece as a leaven capable of working in the mass and of saving and quickening what is best in man. In this connection we may mention *Ingram Bywater; the Memoir of an Oxford Scholar*, by W. W. Jackson (Oxford Univ. Press), a living portrait of a deceased Hellenist of large vision and penetrating scholarship, recording the quiet life of a student who passed away while thousands who should have been his successors were risking and giving their lives to preserve the values which he, and others such as he, had created and preserved in the security of the study.

The year has brought forth a number of texts of Greek authors. *Homeri Opera III*, edited by T. W. Allen (Oxford Univ. Press) gives a revised and altogether admirable text of the *Odyssey*, Books I-XII, in a second edition, for the completion of which every lover of Homer will look forward. Eight volumes of the *Loeb Classical Library* (Putnams) devoted to Greek writers have come to hand since the last review. Diôs' Roman *History*, in the excellent translation of E. Cary, has completed the fifth volume. W. R. Paton adds a second of *The Greek Anthology* with an admirable translation and a valuable introduction. H. B. Dewing's *Procopius* also progresses to a second volume, giving us a most desirable addition to our resources. S. Gaselee, who lately translated Parthenius, now puts us under further obligations to him by his text and translation of the romance of *Achilles Tatius;* both are of excellent quality. H. L. Jones has a more difficult task in editing and rendering Strabo, of which work the first volume has appeared; while serviceable, it falls below the standard generally maintained in the Loeb Library. Sir Arthur Hort's *Theophrastus' Enquiry into Plants* (2 vols.), on the contrary, is a masterful rendering of a work of the greatest interest and difficulty, requiring great knowledge and accuracy.

Theophrastus and the Greek Physiological Psychology before Aristotle by G. M. Stratton (Macmillans) gives a general account of Theophrastus as a psychologist of sense perception, a text of the treatise *De Sensibus* accompanied by a translation, and copious notes on the text and translation. *Epictetus, the Discourses and Manual*, translated by P. E. Matheson (Oxford Univ. Press), is altogether admirable as a rendering of the kindly Stoic. *The Prometheus Bound of Aeschylus*, translated by M. C. Wier (Century Co.), is a faithful rendering without outstanding literary merit. *The Rhesus of Euripides*, edited by W. H. Porter (Cambridge Univ. Press), adds an excellent brief edition of a play little read. The most important book of the year is *The Fragments of Sophocles* (3 vols.), edited by A. C. Pearson (Cambridge Univ. Press), who took up the work where it was left on the death successively of Jebb and of Headlam. Containing all the known fragments of Sophocles, with a scholarly commentary and an index to the whole series of volumes, it is a fitting conclusion of the best edition of the great tragic poet, that of Jebb.

The great work, *The Mythology of All Nations* (Marshall Jones), begins auspiciously with the first volume ("Greek and Roman") by W. S. Fox, who gives a useful and interesting survey of the field. *The Days of Alcibiades* by C. E. Robinson (Longmans) draws a picture of life in the Athens of the fifth century, making Alcibiades the central figure. The book admirably serves its purpose of vivifying history. *A Greek Reader for Schools* by C. E. Freeman and W. D. Lowe (Oxford Univ. Press) offers varied readings from the best authors in selections of moderate difficulty. Several studies in detail also should be mentioned. *The Socratic Doctrine of the Soul* by John Burnet (British Academy) presents a valuable study of an important theme. *A History of Greek Economic Thought* by A. A. Trever (Univ. of Chicago Press) is a penetrating and illuminating historical study which admirably covers a neglected subject. *The Ethics of Euripides* by Rhys Carpenter (Columbia Univ. Press) has a vaguer theme and arrives at less satisfactory results. *The Hellenic Origins of Christian Asceticism* by J. W. Swain (Columbia Univ. Press) makes a valuable contribution to the history of religious asceticism. S. Gaselee is to be thanked for his descriptive list of *The Greek Manuscripts in the Old Seraglio at Constantinople* (Cambridge Univ. Press).

Dr. Marion Mills Miller in *The Return of Odysseus* (Stratford Co.) treats in the form of a Greek drama the beautiful tale of Homer. Though not in the truest sense dramatic, the play has caught much of the spirit of the Greek dramatists. *Un Mensonge de la Science Allemande: Les Prolégomènes à Homère de Frédéric-Auguste Wolf*, by Victor Bernard (Hachette), is a war book, intended to cast discredit on German methods. It admirably serves its purpose, but it does far more, for it shows in detail the debt of Wolf, not only to d'Aubignac, but also to other predecessors. One wishes that the learned and entertaining author had more fully demonstrated the utterly untenable position not only of Wolf but of all those, including d'Aubignac, to whom he was indebted.

LATIN LITERATURE

Charles Knapp

To the Loeb Classical Library these translations of Latin works have been added by American scholars: of Seneca, *Tragoediae*, by F. J. Miller (2 vols.); of Seneca, *Epistulae Morales*, Vol. i, by R. M. Gummere.

Following the plan of preceding years, we give a selected list of articles, arranged according to the Latin authors with whom they deal primarily.[1] It is a pleasure to note that some excellent work within the field of Latin literature is being done by writers primarily concerned with modern literature, especially English literature. "Concerning Caesar's Appearance," by M. E. Deutsch (*CJ.*, xii, 247); "Caesar as Seen in his Works", by G. Lodge (*CW.*, x, 106); "Caesar, *De Bello Gallico*, iv, 28. 2-3", by T. R. Holmes, A. R. Wightman, and C. Knapp (*CW.*, x, 156: see *A. Y. B.*, 1916, p. 768); "Gaius Verres: An Historical Study", by F. H. Cowles (*Cornell Studies in Classical Philology*, xx), of interest especially to students of Cicero's orations against Verres; "*Municipia Fundana*", by J. Elmore (*TAPA.*, xlvii, 35), a discussion of the nature of certain *municipia*, a question suggested by Cicero's *Oratio pro Balbo;* "The Prosecution of Murena", by R. W. Husband (*CJ.*, xii, 102), a study of matters connected with Cicero's *Oratio pro Murena;* "The Consular Speeches of Cicero", by Catharine Saunders (*CW.*, x, 153); "A Concordance to Horace", by Lane Cooper, a very valuable work; "Horace and Valerius Cato", parts II and III, by G. L. Hendrickson (*CP.*, xii, 77, 329: see *A. Y. B.*, 1916, p. 768), an effort to identify the adversary with whom Horace, in *Sermones* I, 10, carries on a discussion about Lucilius, and a general treatment of certain phases of the literary period of transition from Catullus to the early Augustans; "*Molle atque Facetum*", by C. Knapp (*AJP.*, xxxviii, 194), a discussion of the famous phrase used by Horace, *Sermones* I, 10, 44, of Vergil; "Rhetorical Elements in Livy's Direct Speeches", by H. V. Canter (*AJP.*, xxxviii, 125); "Petronius and the Greek Romance", by C. W. Mendel (*CP.*, xii, 158); "The Stratulax Scene in Plautus' *Truculentus*", by E. W. Fay (*Univ. of Texas Bull.*, *Memorial Volume to Shakespeare and Harvey*, 155); "References to Painting in Plautus and Terence", by C. Knapp (*CP.*, xii, 143); "The Plot of the *Epidicus*" of Plautus, by A. L. Wheeler (*AJP.*, xxxviii, 237); "Propertius: A Modern Lover in the Augustan Age", by K. F. Smith (*Sewanee Review*, Jan., 1917); "On a Venetian Codex of Pliny's Letters," by E. T. Merrill (*CP.*, xii, 259); "Pompeius Trogus and Justinus", by R. B. Steele (*AJP.*, xxxviii, 19), an argument that Trogus wrote after Books 90-96 of Livy's great history were published, and that Justinus prepared his epitome of Trogus's work at Rome in 144 or 145 A. D.; "Suetonius and Caesar's German Campaigns", by M. E. Deutsch (*TAPA.*, xlvii, 23); "A Study of Vergil's Descriptions of Nature", by Mabel Louise Anderson; "On the Virgilian *Catalepton* II", by H. R. Fairclough (*TAPA.*, xlvii, 43), an argument that this much-discussed piece is an elaborate *double entendre*, ridiculing T. Annius Cimber for his love of archaic words and ancient spells; "Vergil and Nature", by Mabel V. Root (*CW.*, x, 194); "The Boy Ascanius," by H. O. Ryder (*CW.*, x, 210), a study of the *rôle* played by Ascanius in the Æneid; "Virgil: An Interpretation", by M. S. Slaughter (*CJ.*, xii, 359).

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[1] Periodicals are cited thus: *AJP.*, *American Journal of Philology; CJ.*, *Classical Journal; CP.*, *Classical Philology; CW.*, *Classical Weekly; HS.*, *Harvard Studies; TAPA.*, *Transactions of the American Philological Association.*

Less definitely connected with a particular author are the following: "Titus Labienus", by F. F. Abbott (*CJ.*, xiii, 4), an account of the career of Caesar's famous *legatus;* "The Birthday as a Commonplace of Roman Elegy", by Helen C. Bowerman (*CJ.*, xii, 310); "Comparative Philology and the Classics", by C. D. Buck (*TAPA.*, xlvii, 65); "The Classics and the Protestant Reformation", by T. A. Buenger (*CW.*, xi, 34); "Compound Adjectives in Early Latin Poetry", by Cornelia C. Coulter (*TAPA.*, xlvii, 153); an elaborate review of C. C. Conrad, *The Technique of Continuous Action in Roman Comedy,* by R. C. Flickinger (CW., x, 147); "The Decline of Roman Tragedy", by T. Frank (*CJ.*, xii, 176); "Chaucer's Lollius", by G. L. Kittredge (*HS.*, xxviii, 47), an argument that Chaucer believed that a Roman named Lollius was author of a work, now lost, on the Trojan War, and that he pretended to be translating this work in his *Troilus*, expecting his readers, however, to see through this transparent literary device and to realize his indebtedness to Boccacio; "On Certain Ancient Errors in Geographical Orientation", by E. T. Merrill (*CJ.*, xii, 88), a paper of interest to students of Caesar, Polybius, Tacitus, etc.; "St. Severinus and the Closing Years of the Province of Noricum", by C. C. Mierow (*Colorado Coll. Pub.*, *Language Series*, ii, 299; "The Antecedents of Hellenistic Comedy", by H. W. Prescott (*CP.*, xii, 405), an article of importance to students of Plautus and Terence; "The Profits of Literature in Ancient Rome", by E. T. Sage (*CW.*, x, 170), a fresh examination of a much-discussed question, which bears on a familiar passage of Horace, *Epistles* II, 2, 51-52, with the conclusion that Roman writers derived profit, not from the sale of copies of their works, but from the sale of their manuscripts and from patrons; "The *Plebs Urbana* in Rome", by E. A. Schnabel (*CW.*, x, 161); "Illogical Idiom", by Paul Shorey (*TAPA.*, xlvii, 205), a discussion involving a consideration of a wide array of passages in Greek and Latin authors; "Roman Literary Characterization", by R. B. Steele (*CW.*, x, 43), a study of the terms used by Latin writers, especially Cicero and Quintilian, to describe the work and style of other authors; "The Sources and the Extent of Petrarch's Knowledge of the Life of Vergil", by D. R. Stuart (*CP.*, xii, 365); "Three as a Magic Number in Latin Literature", by E. Tavenner (*TAPA.*, xlvii, 117); "Epithets of the

Tiber in the Roman Poets", by V. J. Warner (*CW.*, xi, 52); "The Position of Women in the Late Roman Republic", by Helen E. Wiegand (*CJ.*, xii, 378, 423); "Roman Factories", by F. W. Wright (*CW.*, xi, 17).

Several dissertations deserve notice: "The Significance of Certain Colors in Roman Ritual", by Mary Emma Armstrong; "Roman Craftsmen and Tradesmen of the Early Empire", by Ethel H. Brewster; "Goethe's Estimate of the Greek and Latin Writers", by W. J. Keller; "Studies in the Diction of the *Sermo Amatorius* in Roman Comedy", by K. Preston; "Studies in Magic from Latin Literature", by E. Tavenner; "The Influence of Horace on the Chief English Poets of the Nineteenth Century", by Mary Rebecca Thayer; "'Know Thyself' in Greek and Latin Literature", by Elizabeth Gregory Wilkins.

SEMITIC PHILOLOGY AND LITERATURE

MORRIS JASTROW, JR.

The most active medium of publication in the field of Semitics during the year has been the Museum of Archeology of the University of Pennsylvania, which has brought out in the Babylonian Section no less than five volumes. Of these the most important are two volumes by Edward Chiera, giving long lists of Sumerian, Akkadian and "Amoritic" personal names occurring in long cuneiform lists that formed part of the Temple School equipment in ancient Nippur. These lists were used in the Temple School both as copy exercises for the pupils and as a means of explaining the character and composition of the names. As a result of his careful investigation of the hundreds of fragments of these lists now in the University of Pennsylvania Museum, Dr. Chiera has thrown a great deal of new light on the pedagogical methods used in ancient Babylonia. He shows, for example, how the teacher wrote the exercise on the left portion of the tablet which the pupil was expected to copy as closely as he could on the right-hand column, very much, therefore, like modern copybooks.

Stephen Langdon has published three volumes during the year—one of Sumerian liturgical texts, one of Sumerian grammatical texts, and the third a new fragment of the famous epic of Gilgamesh which the University of Pennsylvania Museum was fortunate enough to purchase some years ago. These publications by Dr. Langdon are of considerable importance, but unfortunately, as in the case of his previous publications, the copies are most inaccurately made and there is literally scarcely a page that does not contain errors. This is particularly the case with the important new Gilgamesh fragment, which can hardly be studied properly without a renewed reference to the original tablet. The fragment fills out an important gap in the story, dealing chiefly with the episode between Gilgamesh and his companion Enkidu. The fragment belongs to the Old Babylonian period (not the late Persian period, as Dr. Langdon originally stated in the *Museum Journal*), and by comparison with the late Assyrian version found by Layard among the fragments of the great Royal Library of Nineveh, it is seen that the earlier version, dating from about 2000 B. C., is also much briefer.

Despite the war the De Goeje Foundation of Leyden has continued its activities. Following closely upon the publication of an important collection of Arabic phrases and sayings edited by Prof. C. A. Storey, Prof. Ignaz Goldziher, the well-known authority on Mohammedan theology, has brought out the text of a work by the great orthodox theologian Gazali, directed against the sect commonly known as Isma'ili, but more properly "Batiniyya", a name that emphasizes the tendency of this sect to look for the "inner" meaning in the Koran. Instead of a translation Professor Goldziher gives in running form an epitome of each chapter of this treatise, which, although entirely polemical in character, is nevertheless of value also in making clearer to us the standpoint of Moslem orthodoxy in regard to the exercise of individual judgment. While Mohammedan orthodoxy, which secured a permanent triumph through the great influence of Gazali, is rigidly opposed to deviation from what has once received general consensus, nevertheless free investigation is encouraged and the mere acceptance of a view because traditional is discouraged.

Of more present interest is a little volume by Prof. Snouck Hurgronje on the *Revolt of Arabia*. Professor Gottheil of Columbia University has rendered a real service in making this account of the background of the political movement in Arabia since the war began accessible to English readers (Putnams). Professor Snouck Hurgronje, who knows the Mohammedan East better than any other living scholar, looks upon the movement in Arabia, which has the support of England, as the protest of the national Arabic spirit against the "foreign yoke" imposed in the name of Islam by a power which has little appreciation of the real spirit of Islam. It is too early to judge of the outcome of the revolt, though it is possible that it will lead to a revival of Arabic nationalism and unite the Arabs into a state that will bring about more satisfactory conditions in the Near East than those which existed before the war. As bearing likewise on the situation in the East, I may be permitted to mention my own book on "The War and the Bagdad Railway" (Ohio, 1917, Lippincott), which contains as its main chapter a survey of the history of Asia Minor and proposes a reconstitution of the near East into a series of independent states under international guarantees.

INDO-EUROPEAN PHILOLOGY

(*Exclusive of the Germanic Languages*)

Roland G. Kent

General and Miscellaneous.—E. H. Sturtevant in "Linguistic Change" (Univ. of Chicago Press), gives an excellent introduction to the historical study of language, scientific and up-to-date. C. D. Buck's "Comparative Philology and the Classics" (*TAPA.*,[1] xlvii, 65), his presidential address before the American Philological Association, is an admirable survey of the relations between the subjects. Paul Shorey discusses, with many examples, the varieties and psychological basis of "Illogical Idiom" (*ibid.*, 205), common in all languages. Other articles are "Subject and Predicate" (*ibid.*, 13), by Leonard Bloomfield; "On the Need of Establishing Laboratories for Experimental Linguistics and Phonetics" (*PAPA.*, xlvii, xix), by R. J. Kellogg; "The Present Status of the Problem of Races in the Prehistoric Aegean Basin" (*Classical Journal*, xiii, 25), by A. E. R. Boak; "Celtic Studies in the United States" (*Columbia Univ. Quart.*, xix, 30), by J. L. Gerig.

Indo-Iranian.—In the Harvard Oriental Series, edited by C. R. Lanman, three more volumes are to be noted: xx and xxiv, "*Rig-Veda Repetitions*, the repeated verses and distichs and stanzas of the Rig-Veda in systematic presentation and with critical discussion", by Maurice Bloomfield; and xxi, "*Rama's Later History*, or Uttara-Rama-Charita, an ancient Hindu drama by Bhavabhuti, Part I, introduction and translation," by S. K. Belvalkar. A number of difficult Vedic passages are interpreted anew by M. Bloomfield in two articles, "Some Cruces in Vedic Text, Grammar and Interpretation" (*AJP.*, xxxviii, 1), and "On Two Cases of Metrical Shortening of a Fused Long Syllable, Rig-Veda VIII, 13, 18, and VI, 2, 7" (*Aufsätze zur Kultur- und Sprachgeschichte*, Ernst Kuhn Gewidmet, 211). E. W. Hopkins writes on "Indra as God of Fertility" (*JAOS.*, xxxvi, 242), and on "Indic and Indian (= American) Religious Parallels" (*JAOS.*, xxxvii, 72 and 85). R. G. Kent's "Folk-Tales of India" and Franklin Edgerton's "The Hindu Beast Fable and the Story of its Travels" (*Univ. of Pennsylvania Faculty Lectures*, iii, 237 and 359; reprinted from *Old Penn*, xiv, 677 and 773) are mutually supplementary treatments of the theme in semi-popular form.

The sixth volume of *The Mythology of All Races*, edited by L. H. Gray and G. F. Moore, has appeared, containing as its first part "Indian Mythology", by A. B. Keith of Edinburgh University, and as its second part "Iranian Mythology", by A. J. Carnoy, a valuable handbook of the subject. Other articles by Carnoy are "*La Magie dans l'Iran*" (*Muséon*, i, 171); "Iranian Views of Origins in Connection with Similar Babylonian Beliefs" (*JAOS.*, xxxvi, 300); "The Moral Deities of Iran and India and their Origins" (*Amer. Jour. Theol.*, xxi, 58). On the ancient Persian cuneiform inscriptions we now have E. L. Johnson's *Historical Grammar of the Ancient Persian Language*, forming Vol. viii of the Vanderbilt Oriental Series, a convenient handbook, the only systematic treatment of the topic in English. In the same field, there is an article by H. C. Tolman, "The Graphic Representation of Final Indo-Iranian *a* in Ancient Persian" (*PAPA.*, xlvii, xxix). In the more recent Persian literature, there is "The Allegory of the Moths and the Flame, translated from the Mantiq at-Tair of Farīd ad-Dīn 'Attār," (*JAOS.*, xxxvi, 345), by A. V. W. Jackson; and "A Manuscript of the Manafiʿ al-Haiawān in the Library of Mr. J. P. Morgan" (*ibid.*, 381), by Abraham Johannan. There are also articles on Iranian and other linguistic topics in Hastings' *Encyclopædia of Religion and Ethics* and in the second edition of the *New International Encyclopædia*, by Jackson, Carnoy, and Raymond Weeks.

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[1] Periodicals are cited under the following abbreviations: *AJP.*, *American Journal of Philology; CP.*, *Classical Philology; CQ.*, *Classical Quarterly; CW.*, *Classical Weekly; JAOS.*, *Journal of the American Oriental Society; PAPA.*, *TAPA.*, *Proceedings*, *Transactions of the American Philological Association.*

Greek and Latin.—The "Studies in Greek Noun Formations", begun by E. H. Sturtevant with "Labial Terminations", has been continued by C. D. Buck, on "Dental Terminations" (*CP.*, xii, 21, 173, 295). E. W. Fay in "Syntax and Etymology: The Impersonals of Emotion" (*CQ.*, xi, 88) explains the impersonal verbs of the type *piget* as having originally had sharp physical meanings; in "Sobriquet and Stem" (*AJP.*, xxxviii, 82) he seeks to show that the final *e* of the *vocative* is by origin a particle used to attract attention. In both of these papers, as also in others (*ibid.*, 228; *CQ.*, x, 229), he defends his thesis that suffixes are really only disguised second elements of compounds; he has an addendum to his interpretation of the Oscan Slingshot of Saepinum in the *Rivista di Filologia* (xliv, 512) and an etymology of ὠκεανός in *The Classical Weekly* (x, 200). Problems of composition and of semantics are handled, mainly not in agreement with Fay, by Cornelia C. Coulter, "Compound Adjectives in Early Latin Poetry" (*TAPA.*, xlvii, 153); E. W. Nichols, "The Semantics of Latin Adjective Terminations" (*AJP.*, xxxvii, 417); C. W. Peppler, "The Suffix -*μα* in Aristophanes" (*ibid.*, 459); Walter Petersen, "Latin Diminution of Adjectives" (*CP.*, xi, 426; xii, 49).

In the phonetics and other phenomena of popular and later Latin, E. H. Sturtevant has written on "The Monophthongization of Latin *ae*" (*TAPA.*, xlvii, 107); F. F. Abbott on "The Pronunciation of a Final Consonant when Followed by an Initial Consonant in a Latin Word-Group" (*AJP.*, xxxviii, 73); A. J. Carnoy on "Some Obscurities in the Assibilation of *ti* and *di* before a Vowel in Vulgar Latin" (*TAPA.*, xlvii, 145), "Apophony and Rhyme Words in Vulgar Latin Onomatopœias" (*AJP.*, xxxviii, 265), "Adjectival Nouns in Vulgar Latin and Early Romance" (*Romanic Review*, viii, 166), and "The Reduplication of Consonants in Vulgar Latin" (*Modern Philology*, xv, 31). The absurdities of the etymologies of late Latin grammarians are shown by T. A. Buenger in "The Phonetic Presuppositions of the Fulgentian Etymologies" (*PAPA.*, xlvii, xv), and by W. A. Merrill in "Some Etymologies by Cassiodorus" (*ibid.*, xl).

H. W. Smyth's *Greek Grammar for Schools and Colleges* (Am. Book Co.) has now appeared. Articles on syntactical subjects are as follows: F. H. Fowler, "Determined Futurity in Greek" (*CW.*, x, 178 and 185); Emily H. Dutton, "Studies in Greek Prepositional Phrases: (διά, ἀπό, ἐκ, εἰς, ἐν)" (Univ. of Chicago doctoral dissertation); C. E. Bennett, "Kroll on the Independent Latin Subjunctive" (*CP.*, xii, 121); Jefferson Elmore, "The Subjunctive in Restrictive *Qui* and *Quod* Clauses" (*ibid.*, 253); Miss E. M. Tyng, "An Attempt to Explain Tense Usage in Cicero's Orations" (*PAPA.*, xlvii, xxx).

XXX. EDUCATION AND EDUCATIONAL INSTITUTIONS

W. CARSON RYAN, JR.

EDUCATION AS A NATIONAL CONCERN IN WAR TIME

General.—The war is the central fact for education in the year 1917, as it is for all fields. With the entrance of the United States into the conflict and the necessary mobilization of the military, industrial and intellectual resources of the nation, education as a national concern assumed a significance previously unrealized, and the Federal Government, long reluctant to enter the field of direct educational effort, found itself obliged to take an active leadership in education throughout the states. Through the newly created Federal Board for Vocational Education, the reëducation agencies of the War Risk Bureau, the Surgeon-General's Office of the War Department, the Child Labor Division of the Children's Bureau, not to mention the already existent States Relations Service of the Department of Agriculture and the Bureau of Education of the Interior Department, the latter with 50 years of statistical achievement to its credit, the nation is at last making itself distinctly felt in education. Some of the recent activities of the Federal Government are the direct result of the war; others have been under way for many years and have acquired momentum as a part of the preparedness programme.

School and College Enrollment as Affected by the War.—During the first weeks of the war the National Government was besieged for advice in the matter of school attendance. There seemed to be a tendency to abandon some of the safeguards that society had placed about the labor of children. Persistent efforts were made in a number of States to suspend child-labor and compulsory-attendance laws that have been put on the statute books after years of strenuous efforts in behalf of childhood. The Government used its facilities wherever possible to oppose any tampering with school-attendance acts, the President leading in opposing any undue interference with laws designed to safeguard the children.

Maintenance of educational institutions to the fullest efficiency was declared to be the lesson learned by the other nations in the war. On the one hand it was necessary that continued provision for elementary public school education should be insisted upon as a duty to posterity. On the other hand it was desirable that young men below the draft age, especially those in high schools, and in the earlier years of technical training, should be made to realize the importance of continuing their education in order that the service they might render the nation should be more effective than it would be without special educational advantages. High school students were particularly affected by the war situation. Drafts of labor for military and industrial purposes were such that high school students of both sexes found themselves in demand for employment at wages that would not be dreamed of in normal times. In his circular of May 22, widely distributed to educational institutions, the United States Commissioner of Education expressed the conviction of the Federal Government in the statement that "all schools of whatever grade should remain open with their full quota of officers and teachers." The Commissioner pointed out in this announcement that during school hours and out of school, on mornings, afternoons, Saturdays and during vacation, all older children and youths should be encouraged and directed to do as much useful, productive work as they could without interfering with school duties; that attendance laws should be strictly enforced; that a school year of 12 weeks should be adopted; that continuation classes ought to be formed for those who could not attend during the day, and that the task of training teachers should be pursued with even greater force because of the burdens put upon the schools in war time.

With special reference to university and college men undergoing technical training, President Wilson wrote to Secretary of the Interior Lane on July 20:

> It would seriously impair America's prospects of success in this war if the supply of highly trained men were unnecessarily diminished. I therefore have no hesitation in urging colleges and technical schools to endeavor to maintain their courses as far as possible on the usual basis. There will be many young men from these institutions who will serve in the armed forces of the country. Those who fall below the age of selective conscription and who do not enlist may feel that by pursuing their courses with earnestness and diligence they also are preparing themselves for valuable service to the Nation. I would particularly urge upon the young people who are leaving our high schools that as many of them as can do so avail themselves this year of the opportunities afforded by the colleges and technical schools, to the end that the country may not lack an adequate supply of trained men and women.

The efforts to reduce to a minimum the disorganizing effects of the war on the public schools seem to have been measurably successful. The Federal Bureau of Education made a special investigation in October to determine how the 1917 enrollment compared with that for 1916. Reports from 1,411 cities and 696 counties or districts showed an increase of about two and one-half per cent. in elementary enrollment over the preceding year. This is almost exactly the same as the normal increase for peace times. For high schools, however, the increase is only two and one-half per cent., as compared with a normal annual increase of nine and one-half per cent. It is significant that in all but the fourth high school year there is a decline in the number of boys in high school but an increase in the number of girls. The following figures are based on reports from high schools enrolling 58 per cent. of the pupils.

EFFECT OF THE WAR ON HIGH SCHOOL ENROLLMENT (OCTOBER, 1917)

Boys				Girls			
Class	Year	Enrollment	Increase or Decrease	Class	Year	Enrollment	Increase or Decrease
1st	1916	141,299		1st	1916	159,933	
	1917	141,293	−6		1917	162,942	+3,009
2nd	1916	89,949		2nd	1916	107,637	
	1917	89,774	−175		1917	111,939	+4,302
3rd	1916	62,177		3rd	1916	77,718	
	1917	61,519	−658		1917	80,219	+2,501
4th	1916	45,217		4th	1916	60,792	
	1917	45,572	+355		1917	64,547	+3,755

In elementary city schools the increase in enrollment is slightly above normal. The city high schools also show an increase over last year, but a decrease of about 10 per cent. from what would have been the normal high school enrollment. One fortunate sign, however, appears to be a wholesome tendency for fourth-year students to remain and complete the high school course. For girls in city high schools there are gains in every year.

It was anticipated that college enrollments would show heavy reductions due to the war. The following table indicates the registration figures in the various universities and colleges of the country arranged by departments or schools. Figures for men and women are not separated in the first table, but are given separately in the tables that follow. It will be noted that colleges of engineering show a falling off of only 18.4 per cent., revealing the direct result of the campaign of education regarding the special value of technically trained men to the nation at war. Other schools and colleges showed much heavier reductions, notably colleges of agriculture, where the principle of selection has not been allowed to operate.

EFFECT OF THE WAR ON STUDENT ENROLLMENT

COLLEGES AND UNIVERSITIES OF THE UNITED STATES

(*Total number of colleges and universities, 625; number reporting, 393*)

Colleges, Schools, or Departments	Number Reporting	Students		Per cent. of Gain or Loss
		1916	1917	
Liberal Arts	326	119,888	106,270	−11.4
Agriculture	38	11,799	7,680	−34.9
Engineering	94	25,826	21,078	−18.4
Mines	18	1,584	1,175	−25.8
Education (Pedagogy)	36	10,478	9,507	− 9.3
Medicine	43	6,329	6,521	+ 3.0
Architecture	13	1,196	847	−20.8
Law	58	9,759	5,703	−41.5
Dentistry	15	4,102	3,264	−20.4
Theology	25	1,547	1,137	−26.5
Veterinary Medicine	8	525	348	−33.7
Pharmacy	25	2,165	1,901	−12.2
Home Economics	26	2,773	2,675	− 3.5
Business (Commerce)	27	5,019	4,469	−10.9
Journalism	6	420	277	−34.0
Forestry	6	484	236	−51.2
Graduate	14	3,101	2,158	−30.4

The results of the campaign to have high school students, both boys and girls, go on to college to fill the gaps of the college men in war service may be observed somewhat better in the following tables, which show enrollment by sex and by college classes. It will be noticed that in the liberal arts colleges the increase in women students makes up to a considerable extent for the falling off in men.

PERCENTAGE OF CHANGE IN ENROLLMENT IN CERTAIN INSTITUTIONS GROUPED BY SEX AND CLASS

COLLEGES OF ENGINEERING

(*Per cent. of Gain and Loss*)

	Men
Freshmen	− 5.1
Sophomores	−14.2
Juniors	−30.5
Seniors	−32.6
Graduates and Special	−28.8

COLLEGES OF LIBERAL ARTS

(*Per cent. of Gain or Loss*)

	Men	Women
Freshmen	−16.3	+ 0.6
Sophomores	−14.4	+ 2.3
Juniors	−23.7	+ 1.4
Seniors	−29.4	+ 8.4
Graduates and Special	−40.1	+10.8

COLLEGES OF AGRICULTURE

(*Per cent. of Gain or Loss*)

	Men	Women
Freshmen	−23.9	− 8.2
Sophomores	−31.1	+ 3.0
Juniors	−37.9	− 5.1
Seniors	−42.2	+ 4.3
Graduates and Special	−51.8	−40.5

Organizing the Colleges for War Work.—At the outbreak of the war, colleges, universities, and other educational institutions were eager to do their part, but few of them knew what steps to take. Columbia University had worked out a service blank which proved to be unusually effective in cataloguing the resources represented by its faculty, graduates, and students. The Bureau of Education reprinted this blank and sent it, under registered mail, to other colleges and universities, in order that the successful experience of one institution might effectually be made known to all. Through use of this and similar blanks the colleges and universities were enabled to make a personnel index of the entire university body; to perfect an internal organization into larger and smaller subdivisions which should operate autonomously and in coördination with one another; to establish coöperative relations with governmental agencies of the nation, the state, and the city for patriotic service.

On May 3, 1917, the Committee on Science, Engineering, and Education of the Advisory Commission of the Council of National Defense held a conference at Washington in which were represented such organizations as the National Association of State Universities, the Association of

American Agricultural Colleges and Experiment Stations, the Association of American Universities, the Association of American Colleges, the Society for the Promotion of Engineering Education, and a number of institutions not affiliated with any of these associations. As a result of this conference a statement of principles was prepared and distributed by the Bureau of Education to colleges and universities. This statement of principles suggested that colleges and universities should so organize their work as to be of the greatest possible usefulness to the country in its present crisis; that all young men below the age of liability to the selective draft and those not recommended for special service who could avail themselves of the opportunities offered by the colleges should be urged to do so; that the colleges consider the advisability of dividing the academic year into four quarters, of approximately 12 weeks each, and that, where necessary, courses might best be adapted to the needs of food production; that in view of the supreme importance of applied science in the present war, students pursuing technical courses such as medicine, agriculture, and engineering, should be considered as rendering services more valuable than if they were to enroll at once in the military or naval service; that the Government should provide or encourage military training for all young men in college and that the colleges should include teaching in military science. It was further stated to be the judgment of the conference that the Bureau of Education of the Department of the Interior and the States Relations Service of the Department of Agriculture, with the coöperation of the Committee on Science, Engineering, and Education of the Advisory Commission of the Council of National Defense, should be the medium of communication between the Federal departments and the higher educational institutions of the country. Finally, the conference expressed its conviction "that an educational responsibility rests on the institutions of higher learning to disseminate correct information concerning the issues involved in the war and to interpret its meaning."

Meetings of the section developing out of this conference were held on May 6, 16, and 26, chiefly to discuss changes in college curricula for adaptation to the needs of the war. One meeting was devoted to the part the secondary schools should take in the preparation for war. A most important conference was that held July 3-4, in which Canadian educators related their experiences in connection with the war and rendered helpful advice to American educators face to face with similar problems.

Reports received from colleges and universities show that six different types of war service are being rendered by these institutions. They comprise: (1) Special courses for regular students, introduced as a result of the war; (2) special extension courses; (3) new schools or courses established for the benefit of the military or naval service directly; (4) extra academic service of students and professors; (5) changes in college calendars; (6) utilization by the Government of research laboratories and of professors in an expert capacity.

The Schools and Food Production and Conservation.—Government agencies early attempted to enlist the schools in the work of stimulating crop production and conserving the food supply. The Department of Agriculture, the Food Administration, the Bureau of Education, and a number of private agencies coöperated in this work. During the first days of the war, the United States Commissioner of Education sent to city and county school superintendents throughout the United States letters pointing out the increased importance of school gardening and especially home gardening directed by the school. The Commissioner urged that school boards everywhere provide for home gardening under school auspices by employing through the entire spring, summer and fall at least one garden teacher or director for every 100 children between the ages of 9 and 15, for whom land could be found, and who could be induced to spend three or four hours a day in gardening. He appealed to all principals and teachers who had any practical knowledge of gardening to offer their services freely. He pointed out that under proper direction school boys and girls in the cities, towns, villages, suburban and manufacturing communities of the United States might easily produce in the gardens and back yards of their homes, and on available vacant lots, three or four hundred million dollars worth of vegetables and fruits annually, at the same time gaining physical health and strength and much of educational value.

It was soon seen that the schools were effective agencies not only for food production but for food conservation. The Government urged home economics teachers to see to it that their lessons exemplified the economy in cooking that is necessary at all times, but especially in war time; that they teach the use of substitutes for certain of the more expensive foods, and that the colleges, normal schools and high schools arrange to give instruction to groups of housekeepers in their respective communities. The Food Administration prepared a pamphlet on *Ten Lessons in Food Conservation* in collaboration with the Department of Agriculture, the Bureau of Education and home economic experts from outside the Federal service, and this pamphlet was distributed by the Government to summer schools, teachers, institutions, and individual workers engaged in teaching the principles and practice of conservation, so that the fundamentals of food saving might be made known as widely as possible by the teachers in their regular school work. The Bureau of Education pointed out to home economics workers the special opportunity presented to them for service by the war.

A still more direct attempt to reach the people through the schools is involved in the *Lessons in Community and National Life* published by the Bureau of Education in co-operation with the Food Administration. These are direct, authoritative, simple lessons in the fundamentals of present-day world organization, in special relation to the problems brought forward by the war. Each month three groups of lessons are issued, one for the upper classes of high schools, another for the upper grades of elementary schools and the first class of high schools, and the third designed for intermediate grades of elementary schools. For each group there will be three or four lessons every month during the eight months of the school year 1917-18. These lesson leaflets are sold to the schools at cost by the Government. By means of these leaflets it is proposed to make known to the boys and girls in the schools, and through them to the parents, the economic, industrial and social facts that need to be realized for a proper understanding of the problems of the war. The entire series represents one of the most significant attempts ever made to bring into the schools the facts of modern civilization.

Reaching Public Understanding Through the Schools.—Not the least of the activities undertaken by the Federal Government in education has to do with the task of reaching public understanding through the medium of the school. The attempt has been made to utilize school machinery to make known the nation's point of view. The Committee on Public Information, established eight days after declaration of war, at once began to develop contacts with the educational institutions of the country. Historians and public men were drafted to the service of illuminating and interpreting the aims of the nation and plans were made to give as wide distribution as possible to the results of their labors. Copies of the annotated war message and the pamphlet *How the War Came to America* were circulated through school officials as well as through numerous other organizations. Finally a plan was adopted whereby the United States Bureau of Education undertook to collect for the Committee on Public Information the names and addresses of all schoolhouses in the United States, to the end that publications issued by the Committee might be distributed to the public through the school principals and teachers, and that through the schools the necessary reports and communications might be made from the local communities to the National Government. At the end of the year this plan had not been worked out in full, but the mere fact that the Government is taking such a step indicates the special importance that the Government ascribes to the educational machinery of the country.

The Spirit of the Educational Profession.—The spirit of the educational profession in the war emergency is perhaps best reflected in the declaration of principles adopted by the National Education Association at Portland, Ore., in July. This organization, noted for its opposition to war, pledged itself whole-heartedly to work for "genuine military training, ample in scope and practical in character," in technical institutions, colleges and universities; for the teaching of patriotism by all teachers "whether by heroic story, by song, by biography and history, by social ethics or by a revised and revitalized civics"; and for "establishment of triumphant peace after victory, a peace to be administered by a 'veritable league of honor,' an inclusive league of nations founded upon the principle of national loyalty extended into world citizenship." As war measures the Association also urged the maintenance of the educational system at the highest possible state of efficiency; revision of courses of study; improvement in salaries and conditions of teaching; shortening of vacations and holidays and adaptation of school days to part-time work; continuation schools and wider use of school plants; prompt organization and future development of industrial and other forms of vocational work; physical education, including medical inspection for all children in all schools; training in thrift and conservation. The Association also recorded its customary demands for woman suffrage, the establishment of a national university and the creation of a national department of education under the direction of a Secretary of Education.

VOCATIONAL EDUCATION

The Smith-Hughes Act.—It is significant that the first direct national aid to vocational education of secondary grade comes in war time. Those interested in the development of education as a national concern will recall that the original Morrill Act, typifying the concern of the National Government with agricultural education, was passed in 1862 shortly after the outbreak of the Civil War. The Smith-Hughes Act was signed by President Wilson on Feb. 22. The Federal Board for Vocational Education as organized under the act consists of seven members—the Secretary of Agriculture, the Secretary of Labor, the Secretary of Commerce, the Commissioner of Education, and three citizen members representing respectively labor, agricultural, and manufacturing. The President appointed Arthur E. Holder, of Iowa, to represent labor, Charles A. Greathouse, of Indiana, to represent agriculture, and James P. Munroe, of Massachusetts, to represent manufacturing, for terms of three years, two years, and one year respectively. The Board appointed C. A. Prosser as Director.

The duty of the Federal board under the act is to promote vocational education in coöperation with the states and to administer the Federal aid granted to the states under the law. The table herewith gives the allotments to the various states for the fiscal year 1917-18, together with the estimated total amounts for 1925-26, when the grants reached the maximum. The act provides that the states must agree to appropriate either through the state or locally an amount equivalent to the amount received from the Federal board. The amounts given in the table, therefore, mean an actual expenditure for vocational education of at least twice the amount offered by the Federal Government. The states have been prompt to accept the provisions of the Federal law, all but two having accepted the Federal act at the time of the publication of the report of the Federal board in December, 1917.[1] The following states accepted the provisions of the Federal act and

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[1] Since the compilation of the Board's report North Dakota and Rhode Island, the two states that had not yet reported acceptance of the Act, have given notice of acceptance.

AMOUNT OF FEDERAL GRANTS FOR VOCATIONAL EDUCATION, BY STATES, IN THE INITIAL YEAR (1917-18), AND IN 1925-26[1]

State	Total, 1917-18	Agriculture: For Salaries of Teachers, Supervisors and Directors	Trade, Home Economics and Industry: For Salaries of Teachers	Teacher Training: For Salaries of Teachers and Maintenance of Teacher Training	Total 1925-26, and Annually thereafter[1]
UNITED STATES	$1,655,586.72	$547,027.79	$564,444.89	$544,114.04	$7,161,726.40
North Atlantic:					
Maine	15,000.00	5,000.00	5,000.00	5,000.00	58,999.00
New Hampshire	15,000.00	5,000.00	5,000.00	5,000.00	38,762.68
Vermont	15,000.00	5,000.00	5,000.00	5,000.00	33,352.72
Massachusetts	60,316.96	5,000.00	36,949.59	18,367.37	273,086.02
Rhode Island	16,202.71	5,000.00	6,202.71	5,000.00	57,216.26
Connecticut	22,902.76	5,000.00	11,820.58	6,082.18	93,087.84
New York	154,210.39	19,535.60	84,950.35	49,724.44	726,364.58
New Jersey	42,773.58	6,382.69	22,547.95	13,842.94	201,269.72
Pennsylvania	127,312.10	30,744.79	54,745.99	41,821.32	596,587.32
Delaware	15,000.00	5,000.00	5,000.00	5,000.00	30,000.00
Maryland	21,304.56	6,455.61	7,781.46	7,067.49	99,557.40
Southern:					
Virginia	32,942.00	16,059.97	5,633.75	11,248.28	152,658.88
North Carolina	36,164.85	19,127.21	5,000.00	12,037.64	161,429.44
South Carolina	26,344.08	13,075.96	5,000.00	8,268.12	110,940.42
Georgia	41,581.59	20,977.89	6,368.18	14,235.52	192,547.46
Florida	15,405.79	5,405.79	5,000.00	5,000.00	57,975.16
Tennessee	34,802.10	17,667.51	5,214.25	11,920.34	161,131.24
Alabama	34,575.42	17,909.85	5,000.00	11,665.57	157,066.70
Mississippi	30,912.95	16,107.79	5,000.00	9,805.16	130,962.64
Arkansas	27,488.96	13,898.67	5,000.00	8,590.29	114,949.74
Louisiana	26,659.16	11,751.76	5,870.05	9,037.35	123,805.56
Texas	62,325.20	29,974.72	11,090.71	21,259.77	288,912.12
East Central:					
West Virginia	21,722.27	10,059.77	5,000.00	6,662.50	89,873.96
Ohio	78,815.42	21,297.12	31,508.60	26,009.70	368,853.72
Kentucky	36,634.04	17,573.48	6,566.70	12,493.86	169,828.80
Michigan	46,048.41	15,026.98	15,688.95	15,332.48	214,960.54
Indiana	44,034.97	15,775.85	13,522.97	14,736.15	205,265.22
Wisconsin	38,078.05	13,470.82	11,873.55	12,733.68	177,533.58
Illinois	93,772.25	21,901.83	41,105.92	30,764.50	439,575.50
Minnesota	33,793.59	12,415.82	10,052.58	11,325.19	157,460.78
Iowa	35,829.39	15,650.98	8,039.92	12,138.49	166,422.38
Missouri	53,701.27	19,195.15	16,537.48	17,968.64	250,333.06
West Central:					
North Dakota	15,205.99	5,205.99	5,000.00	5,000.00	51,235.94
South Dakota	15,139.07	5,139.07	5,000.00	5,000.00	50,834.42
Nebraska	20,434.70	8,929.91	5,000.00	6,504.79	88,639.28
Kansas	27,193.28	12,129.54	5,837.82	9,225.92	126,256.00
Oklahoma	27,587.95	13,546.41	5,000.00	9,041.54	122,071.72
Montana	15,000.00	5,000.00	5,000.00	5,000.00	34,750.04
Wyoming	15,000.00	5,000.00	5,000.00	5,000.00	30,000.00
Colorado	15,000.00	5,000.00	5,000.00	5,000.00	62,680.36
New Mexico	15,000.00	5,000.00	5,000.00	5,000.00	37,066.04
Pacific:					
Idaho	15,000.00	5,000.00	5,000.00	5,000.00	35,544.20
Utah	15,000.00	5,000.00	5,000.00	5,000.00	34,450.72
Arizona	15,000.00	5,000.00	5,000.00	5,000.00	30,000.00
Nevada	15,000.00	5,000.00	5,000.00	5,000.00	30,000.00
Washington	18,825.02	5,435.38	7,158.87	6,230.77	88,027.04
Oregon	15,000.00	5,000.00	5,000.00	5,000.00	54,013.06
California	39,545.89	9,197.88	17,375.96	12,972.05	185,387.14

[1] The law provides for annual increases. The proportionate amounts are to be based on the latest available census figures; hence the actual amounts will vary somewhat from the figures here given, which are based upon the 1910 census.

designated the state boards of education to coöperate with the Federal Board for Vocational Education: Arizona, Arkansas, California, Connecticut, Delaware, Florida, Idaho, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Missouri, Montana, Nevada, New Jersey, New Mexico, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington and Wyoming.

In Alabama a board of seven members was appointed to coöperate with the Federal board. In Colorado the State Board of Agriculture was designated as the state board and was authorized to act until the constitution of the state could be amended so as to provide for an appointive board of education. Special vocational boards were created in Georgia, Illinois, Iowa, Maine, Michigan, Mississippi, Nebraska, New Hampshire, North Carolina, Ohio, Oklahoma and South Dakota. In Wisconsin the existing State Board of Industrial Education was designated as the board to coöperate with the Federal agency; in Minnesota the State High School Board was authorized to coöperate; in New York the Regents of the University of the State of New York were empowered to act, and in Oregon five persons were appointed by the Governor to act as the state board and coöperate with the Federal board.

Policies of the Federal Board.—In its first bulletin the Federal board makes a statement of policies. The board asserts four fundamental principles, as follows: first, that since vocational education is essential to the national welfare, it is a function of the National Government to stimulate the states to undertake this new and needed form of service; second, that Federal funds are necessary in order to equalize the burden of carrying on the work among the states; third, that since the Federal Government is vitally interested in the success of vocational education, it should, so to speak, purchase a degree of participation in this work; and, fourth, that only by creating such a relationship between the central and the local governments can proper standards of educational efficiency be set up.

In its bulletin No. 1 the board announces the establishment of five administrative regions "for purposes of administration and inspection" as follows:

North Atlantic: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, Delaware and Maryland. Headquarters to be in New York City.

Southern: Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Mississippi, Alabama, Arkansas, Louisiana, and Texas. Headquarters in Atlanta.

North Central: Michigan, Ohio, West Virginia, Indiana, Kentucky, Wisconsin, Illinois, Minnesota, Iowa, and Missouri. Headquarters in Indianapolis.

West Central: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Montana, Wyoming, Colorado, and New Mexico. Headquarters in Kansas City.

Pacific: Idaho, Arizona, Nevada, Washington, Oregon, and California. Headquarters in San Francisco.

An agent for the Federal board for the fields of agriculture, trade, and industrial subjects is to be assigned to each region; the agents for home economics remain in Washington. These Federal agents are, in general, to act as administrative representatives of the Federal board in the field, to gather information regarding methods adopted by the several state boards for the administration of the act, and to inspect the work of the state boards in so far as it has to do with the requirements of the law, with the decisions and policies of the Federal board and with the approved plans for the states.

Vocational Training for Conscripted Men.—Immediately upon its organization the Federal board undertook the establishment of a series of special war training classes designed in the main to fit drafted men not yet called to the cantonments for various occupations requiring other than military schooling. The general principles underlying this training are described by the board as follows:

> This preliminary training is to be voluntary and limited to the actual needs of the army as indicated by the several departments. None but physically fit conscripted men due for the second and following drafts may be admitted to the training courses. Classes will be held for the most part in the evenings, on Saturday afternoons, and Sundays, thus permitting the men to continue their regular occupations as uninterruptedly as possible. Certificates of efficiency will be issued to the men upon completion of the course or when dropping out of the course. These certificates or records will be taken by the student to the cantonment as evidence of work done by him in preparing for an occupation which the army needs. Tuition will be free, and equipment and instructors are to be furnished by the schools coöperating, except in such cases as Government aid might be desirable and necessary. Records of the numbers of such men under

training in any subject or locality, as well as information as to name, residence, status as to draft call, cantonment to which they would be called, occupation for which they took training, other occupations in which they have had experience, etc., are to be compiled by the board for its own information and for the information of the War Department.

In doing this work, the board has acted in a wider capacity than as an administrative board dealing with the appropriations to the states controlled by the state boards. It has acted under section 6 of the Vocational Education act, authorizing the making of studies and investigations. So far as schools undertaking this work which receive Federal money are concerned, they are under the control and supervision of the State Boards for Vocational Education, just as they are with regard to any other approved work in which Federal funds are used.

Vocational Training for Disabled Soldiers and Sailors.—Basing its plans upon the experience of the other nations at war, the United States Government early began to make a programme for vocational training of disabled soldiers and sailors. Every belligerent nation in the present great struggle in Europe has taken measures to restore its citizens, handicapped as a direct result of their military employment, so as to enable them, as far as possible, to resume useful industrial employment. At least four Government agencies are working on this problem. The Federal Board for Vocational Education made an investigation to develop such facts "as may be necessary in the formulation at an early date of a plan to meet a situation which is expected to arise upon the return to this country of war cripples." The office of the Surgeon-General of the War Department has a reëducational plan under way as part of the recuperative measures for soldiers. Officers have been assigned by the War Department to carry this work through for every disabled soldier. The War Risk Bureau is authorized under the law creating it to take care of the disabled soldiers and sailors and to make, where necessary, special provision for vocational training to fit soldiers and sailors for new occupations. The Bureau of Education has furnished the material for part of the investigations underlying this new work.

EDUCATIONAL SURVEYS

General.—The educational survey movement, reported upon in the 1916 YEAR BOOK (p. 789) has continued with undiminished force. Stock-taking and the application of efficiency methods to a given educational situation are in thorough accord with the preparedness programme. In war time, as in no other time, the public seeks to know as accurately as possible whether educational systems are performing their work most effectively. The General Education Board continued its survey of the schools of Gary, Ind., begun in the preceding year. The Cleveland survey volumes were completed, and there has been much discussion over the findings and recommendations, especially those relating to education and the industries. The state of Maryland began in a serious way to attack the problems presented by the new educational programme that the 1916 survey had produced. The state of Indiana undertook a very complete vocational survey, utilizing in the task the National Society for the Promotion of Industrial Education. The State University of Kentucky was added to the list of universities surveyed. The city of Akron, Ohio, had a survey by Horace L. Brittain, of the Toronto Bureau of Municipal Research. Illinois published the result of a coöperative survey conducted by the teachers of the state. The Province of Saskatchewan, in western Canada, had a comprehensive survey made of the educational system of the province, engaging for this work an official of the United States Government.

By far the greater number of educational surveys in 1917, however, were made by the United States Bureau of Education, which had reëntered the survey field in 1915, and is now engaged on a number of surveys of state, county, and city systems of schools, as well as colleges and universities. During 1916-17 the Bureau undertook educational surveys of Wyoming, Arizona, Colorado, Delaware, and Tennessee, besides completing the publication work incidental to the surveys of the state of Washington and of the higher educational institutions of Iowa and North Dakota. Surveys were also made of the cities of San Francisco, Cal., Elyria, Ohio, and Webster Groves, Mo.; of Falls and Walker Counties, Tex.; of the University of Nevada and of Bradley Polytechnic Institute, Peoria, Ill. The reports of the Wyoming and Colorado surveys were completed and published during the year. Field work was completed on the Arizona survey and a brief preliminary report issued; the full report will later be published as a printed document. A considerable amount of field work was done on the surveys of Delaware and Tennessee. The South Dakota Legislature passed an act providing for an educational survey, and the Commissioner of Education has been asked to make the survey. A preliminary report of the San Francisco survey has been presented to the Board of Education of San Francisco and the printed document will soon be issued. A report on the Webster Groves survey has been made to the school authorities of the city; the report of the Elyria survey is to be issued in printed form, while the reports on Falls and Walker Counties, Tex., have not yet been published. A report of a survey by the University of Nevada was issued towards the close of the year. To the list of survey reports should be added, as illustrative of a special type of survey work, the two-volume report on Negro Education, completed during the year and published as a bulletin of the bureau. Field study in the investigation of education in the Appalachian Mountain counties, begun in 1915, was completed, and a preliminary report was presented.

Educational Survey Work as a Function of the Bureau of Education.—In its educational survey work the Bureau of Education is carrying out in the most direct manner possible the task contemplated in the original act creating the bureau. The act of 1867 provided for the establishment of a department of education for the purpose of "collecting such statistics and facts as shall show the condition and progress of education in the several States and Territories and diffusing such information respecting the organization and management of school systems and methods of teaching as shall aid the problem of the United States in the establishment and maintenance of efficient school systems." It is precisely this function that the educational survey fulfills. It aims to be "a critical, non-partisan expert examination of general facts and records, educational policies and methods, and the social and economic setting of an institution or group of institutions," with a view to suggesting improvements, not only to state or community surveyed, but also to other states and communities with similar problems. It is already evident that the Bureau's efforts in this field have contributed to the adoption of higher standards and to a clearer understanding of the purposes of various types of educational institutions. In every case the surveys made by the Bureau of Education have culminated in constructive recommendations and many of these recommendations have already been enacted into law.

Numerous agencies have made educational surveys in the past five years. The state surveys of Ohio, Vermont, and Maryland were made by or with the coöperation of such private foundations as the New York Bureau of Municipal Research, the Carnegie Foundation for the Advancement of Teaching, and the General Education Board. State university surveys have occasionally been made by private agencies or individuals usually employed for the work by state commissions or other boards appointed by the legislatures. Some of the city educational surveys have been made by representatives of state departments of education, by professors of university departments or schools of education, or by groups of such professors and their students; while some of the most important and influential city surveys, such as those of Cleveland, Richmond, and Minneapolis, have been made by school men or representatives of university departments of education and industrial investigators organized into a working group under the auspices of such agencies as the Cleveland Foundation, the Russell Sage Foundation, and the National Society for the Promotion of Industrial Education. In this field private philanthropy has taken the initiative, as so often, in doing work for which the Government was not yet ready. It is becoming more and more evident, however, that the educational survey constitutes a type of service most appropriately rendered by the Federal Bureau of Education. The Bureau necessarily represents no locality or special interest; its officers are obliged by their positions to have the widest possible acquaintance with educational conditions; it has immediately available statistics and other material essential to any comparative review of schools or school systems; and the bureau is a public instrument supported by the entire country.

Duplication Among Higher Institutions; "Major and Service Lines."— In the surveys already made by the Bureau many of the most important educational problems of the states have been analyzed and brought nearer to solution. In the survey of the Iowa State higher educational institutions, with which the Bureau resumed its survey activities in 1914, the urgent problem of duplication of effort among state educational institutions received the thorough and impartial treatment it demands. Here is a typical state educational problem that is often quite impossible of solution without recourse to some disinterested outside agency that is free from local prejudices. The principle of "major and service lines" of work, laid down in the Iowa survey report and utilized as a basis for recommendations in other surveys made by the Bureau of Education, has already proved to be specifically valuable as a guide to legislators faced with the inherently difficult problems of college and university factions demanding appropriations. In the Iowa and similar surveys the Bureau, though not avoiding direct recommendations for changes in existing conditions, has sought rather to enunciate principles that would prove to be of general application.

In most states where the university is at one place and the agricultural college at another there is or has been more or less friction between the two institutions. This friction is intensified in states where two strong aggressive institutions have been developed, each striving to enlarge its field of operation. In some of these states the agricultural college has rapidly expanded into a technical university, while the university, striving to become a modern institution, to train men and women for practical pursuits and not alone for the older professions of law, medicine, and teaching, has also tended to become a technical university. The problem in these states is to eliminate, if possible, unnecessary duplication of work, with its accompanying inefficiency and waste of effort and money; and it is to this problem that some of the Bureau's most important surveys have directed themselves.

GENERAL EDUCATIONAL STATISTICS

The latest statistics for education in the United States are contained in Volume II of the Annual Report of the Commissioner of Education for 1917 (published in January, 1918). These statistics are for the year ended June 30, 1916. It will be noted that the figures given in an earlier part of this section were gathered on a special war inquiry. The regular statistics were not gathered by the Bureau of Education for 1917. By a plan which has been recently adopted annual collection of detailed educational statistics is to be abandoned, and a plan of biennial collection to be substituted. The next gathering of statistics will by reason of this new method be published for the year ending June 30, 1918.

Before the war the number of persons enrolled in educational institutions in the United States was increasing at an average rate of half a million annually. In 1910 the enrollment was 20,616,338; in 1913 it was 21,632,513; in 1914, 22,462,342; and in 1916, 23,856,890. Figures for the different types of institutions are presented in the following table:

School and College Enrollment in 1916	Number Enrolled		
	Public	Private	Total
Elementary (kindergarten, primary, and grammar)	18,895,626	1,665,075	20,560,701
Secondary (high schools and academies)	1,456,061	155,135	1,611,196
Secondary (preparatory departments of higher institutions)	29,058	60,583	89,641
Universities and colleges	107,237	152,274	259,511
Professional schools	12,336	57,540	69,876
Normal schools	104,714	6,958	111,672
Total for the above	20,605,032	2,097,565	22,702,597
City evening schools	647,861	....	647,861
Commercial and business schools	....	192,388	192,388
Reform schools	61,828	....	61,828
Schools for the deaf	14,146	587	14,733
Schools for the blind	5,155	....	5,155
Schools for the feeble-minded	36,971	659	37,630
Government Indian schools	32,780	....	32,780
Schools in Alaska supported by the Government	3,665	....	3,665
Other public schools in Alaska	3,163	....	3,163
Orphan asylums and other benevolent institutions (estimated)	....	20,000	20,000
Private kindergartens (individually reported)	....	75,000	75,090
Miscellaneous (art, music, etc.) (estimated)	....	60,000	60,000
Total for special schools	805,569	348,724	1,154,293
Total for all schools in the United States	21,410,601	2,446,289	23,856,890

Public, Elementary and Secondary Schools.—The number of pupils in public kindergartens and elementary schools rose from 16,898,791 in 1910 to 18,895,626 in 1916, or an increase of nearly two million in six years. In the same period the number of public high school students increased from 915,061 to 1,456,061. The total secondary enrollment, public and private, for 1916 was 1,700,837 students, an increase of more than 200,000. For several years the proportion of public school pupils in the total enrollment, elementary and secondary, has remained about the same; elementary pupils in public schools constitute 92 per cent. of the total elementary enrollment, and public high school students are approximately 88 per cent. of the total secondary enrollment. There were 12,003 public high schools in 1916. Of these, 8,906 had full four-year courses, as compared with 8,440 in 1915, and an enrollment of 1,362,514 students. More than 93 per cent. of all public high school students are now in four-year high schools.

Colleges.—There were 259,511 students in the collegiate and resident graduate departments of universities, colleges, and technological schools for 1916, as against 237,168 in 1915 and 183,583 in 1910. The bureau's statistical list for 1916 includes 574 colleges, a gain of 11 as compared with 1915. There were 31,826 baccalaureate, 4,524 graduate, and 825 honorary degrees conferred by these institutions. The degree of doctor of philosophy was conferred on examination by 42 institutions on 520 men and 81 women.

Professional Schools.—Students in 124 law schools reported by the bureau in 1916 numbered 22,993. There were 14,767 medical students in the 92 schools, a decrease of 415 from 1915. The number of medical graduates was 3,086. Theological schools had 12,051 students in 1916, as against 10,588 in 1915; there were 169 schools in 1916. Dentistry students increased from 9,647 in 1915 to 10,715 in 1916.

Teacher Training.—The number of students in public and private normal schools, which passed the hundred-thousand mark in 1915, was 111,672 in 1916. Besides these students in normal schools, 32,450 students were reported in public high school training courses for teachers, and 6,006 in similar courses in private secondary schools; while 48,018 students in professional courses in education were reported by universities and colleges.

Men and Women Teachers.—The number of teachers in the United States in 1916 was 755,250, of whom 192,795 were men and 562,455 women. In 1900 there were 163,999 men and 339,599 women; in 1910, 158,574 men and 471,633 women. In public elementary schools the number of men teachers decreased from 116,416 in 1900 to 93,907 in 1916; in the same period the number of women teachers in the public elementary schools increased from 402,690 to 460,187. In 1900 teaching positions in public high schools were evenly divided between men and women; in 1916 there were 29,131 men, an increase of approximately 19,000, and 39,146 women, an increase of nearly 29,000.

Teachers' Salaries.—The average annual salary of all teachers for 1916 was $563, as compared with $525 in 1914. The figures range from $234 in Mississippi, $264 in North Carolina, and $294 in South Carolina, to $967 in New York and $989 in California.

Cost of Education.—Expenditures for education in 1916, partly estimated, totaled over $900,000,000. The estimated total cost and the *per capita* cost for each type of school are given in the table.

Gifts and bequests to education amounted to $37,095,280 in 1916, of which $30,196,006 was for universities and colleges, $2,251,359 for theological schools, and $2,253,598 for medical schools. Since 1896 sums aggregating $471,000,000 have been given to educational institutions by private donors.

Classification	Estimated per capita Cost	Estimated Total Cost
Public elementary schools	$29.55	$558,391,364
Public high schools	56.54	82,325,689
Private elementary schools	32.00	53,282,400
Private high schools	94.10	14,598,204
Other public and private secondary schools	157.47	14,115,768
Universities, colleges, and professional schools	335.57	110,532,396
Normal schools	158.34	17,682,144
Commercial and business schools	50.00	9,619,400
Reform schools	157.92	9,763,878
Schools for the deaf	300.80	4,431,686
Schools for the blind	498.34	2,568,943
Schools for the feeble-minded	555.42	20,900,455
Government Indian schools	116.69	3,825,098
Schools in Alaska supported by the Federal Government	56.13	205,716
Other public schools in Alaska	50.00	158,150
Orphan asylums, etc	200.00	4,000,000
Private kindergartens	32.00	2,402,880
Miscellaneous, music, art, etc	100.00	6,000,000
Total		$914,804,171

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LIBRARIES

JAMES I. WYER, JR.

War Service of the American Library Association.—Accepting the invitation of the War Department, conveyed through its Commission on Training Camp Activities, the American Library Association has engaged to provide reading matter and library service to all American soldiers and sailors wherever they are. This will be done for the Association by its War Service Committee, which, as the result of a brisk eight weeks' campaign, has raised $1,700,000 to meet the necessary cost of buildings, books, periodicals and professional service. The Librarian of Congress will serve as General Director of the work and will associate with himself the Secretary of the American Library Association and other librarians of prominence.

While shipments of books have already been made to England, France and the Canal Zone, yet for many months this Camp Library service will be performed chiefly in the United States at the cantonments, camps, forts, stations, and so forth (now more than 250 in number), where a million soldiers and sailors are in training. Separate library buildings have been erected at the 32 cantonments and national guard camps and at the Great Lakes Naval Training Station. These buildings, in charge of competent librarians, will be book headquarters for their several camps, not only offering attractive reading facilities to individuals, but serving as centers from which books and magazines will be distributed to barracks, hospitals, and such civilian agencies (the Knights of Columbus, the Y. M. C. A., the Y. M. H. A., for example), as may be recognized on the camp grounds. Through working arrangements with these welfare organizations, trained librarians will be included in their personnel at camps where separate library buildings seem to be unnecessary, and in the smaller army and navy posts the books and magazines will be turned over to the Y. M. C. A. and administered through its huts or tents, which are found wherever soldiers are in training.

The library buildings equipped for service will cost close to $10,000 each. Books enough (exclusive of over half a million which have been donated) for the million men now in service will cost $250,000, while the administration of these buildings and the conduct of the work will require an annual expenditure of over $100,000.

Similar service is established in France as fast as American troops are carried across.

Besides this, the most picturesque and important part of the war service which has been offered to the Committee, it has through sub-committees inaugurated a nation-wide campaign for the collection of books and periodicals; coöperated actively with the U. S. Food Administration in the distribution of state and Federal publications; encouraged patriotism, thrift, relief work and industry; offered the use of library buildings as Liberty Loan stations, for appropriate lectures and meetings, and tried in every way to reveal and emphasize the many important services which the library as an institution may render to the nation in war times. Such services are not alone practical and material. Our people face sacrifice, sadness, bereavement; to many, books will yield the best solace. Soldier and civilian alike must constantly be mindful of the ideals for which America is fighting; books will furnish this reminder. They are the best antidote against hysteria, loose-thinking, and ignorance, and the library which provides them profusely yet discriminatingly is a national stabilizer.

Standardization, Certification, and Salaries.—It has long been known that library salaries are lower than those in any other calling requiring equal education and special training; so low that it is increasingly difficult to maintain those high standards of personal service more and more demanded by the expanding work of American libraries.

It is clear that so long as the library profession may be recruited informally from the laity—so long as no professional standards are required by state and city authorities—just so long will salaries be in keeping with the many untrained, inexpert persons who are permitted by careless or indifferent trustees to serve as librarians. A volume in the recent Cleveland School Survey, *The Public Library and the Public Schools*, states that the salaries paid to school librarians are found insufficient to encourage any young woman to enter any such work, since they are much lower than those of teachers. The Survey declares that school librarians should be at least as well paid as the teachers among whom they work.

Distinct unrest among librarians has been in evidence within the past year in New York City and in Philadelphia. In each city the agitation has taken the form of a librarians' organization closely akin to a trades-union, not avowedly for collective bargaining but for concerted action in any proper way to improve the status of librarians' salaries.

The salary question is intimately connected with the question of standardization of library positions and official certification of librarians, similar to the certification required from teachers, nurses, accountants, and other professional people. The certification of librarians has been studied with some care for two years by an important committee of the New York Library Association, and a comprehensive summary of the entire question was presented to the American Library Association at its annual meeting in Louisville in June. Some action requiring official sanction for the practice of librarianship is inevitable before many years. Several states have attempted to procure legislation toward this end, and the best library sentiment is in favor of such action.

The much debated question of libraries and civil service is also closely related to the questions of salaries and certification. Even those who may not be fully persuaded as to the need or wisdom of grading or certifying librarians make no question that if civil service rules must be applied in our libraries, a system worked out by librarians themselves, to be operated by the educational authorities of the state or city, is much to be preferred to a system in which librarians are roughly grouped with unrelated civil service employees, and the peculiar educational function and needs of the library are ignored. The merit system for librarians is a reform that is surely coming and at no distant date, and it behooves librarians who have the good of the profession at heart to anticipate by some practical and acceptable scheme the action of city and state authorities in this matter.

The time may not be just ripe for action in any or all of these questions, but even their tentative consideration has resulted in genuine progress, both in the general conviction among leading librarians as to the logic and necessity for action, and in a general preparedness of mind among all classes of library workers.

Business and Office Libraries.—There has never been so great a demand for trained cataloguers, indexers, filing clerks, and those competent to bring about effective office organization as since this country has been at war with Germany. This is particularly noticeable in the government offices in Washington, where urgent need has swept aside civil service "red tape" and employed library-trained people wherever they could be found, at salaries which have drawn them from civilian positions.

In New York City, banks, corporations, commercial houses of all sorts, have raided the staffs of the local public libraries for men and women competent to do this work and have paid attractive salaries. This seems to be a tardy but effective tribute to the efficiency of library methods and their practical value in business and government processes.

The Louisville Meeting.—The war, a hot southern city, remoteness from the east where libraries abound, all conspired to limit the attendance at the annual meeting of the American Library Association (June 22-26) to 750, less than half that of the preceding year. On the other hand, a fine and most abundant southern hospitality and a pervading earnestness which sought to discover and to organize most effective forms of library war service gave an unusual distinction and definite aim to the meeting.

The new officers are: president, Thomas L. Montgomery; vice-presidents, Judson Toll Jennings and Linda A. Eastman; secretary, George B. Utley.

Buildings.—Amherst College dedicated on Nov. 9, the new Converse Memorial Library, a $250,000 building, planned with the utmost care to meet the needs of a college which is small and which plans to stay small.

Feb. 15, San Francisco dedicated a million-dollar public library building.

On Oct. 7, Indianapolis dedicated a $500,000 central public library building and three days later the combined building of the St. Paul Public Library and the James J. Hill Reference Library was dedicated. This building represents an outlay of a million and a quarter dollars and for the first time makes reasonably adequate provision of free library facilities for St. Paul.

Gifts.—The American Library Association reports the following library gifts in 1916:

Nickerson bequest to Providence Public Library	$1,500,000
Hall bequest to Edgewood, R. I. Public Library	500,000
Carnegie Corporation	1,241,888
Miscellaneous gifts	1,198,123
Total	$4,440,011

The Carnegie Corporation reports total gifts for library buildings in the U. S. and Canada in 1917 as $764,434.

Owing to failure to meet maintenance conditions (usually 10 per cent. of cost of buildings) the Carnegie Corporation has felt disposed to decline further grants in six states where such derelictions are most numerous. The remedy for this unflattering state of things is in an awakened public opinion and in a vigorous and competent central state library department.

Deaths and Appointments.—The library profession has lost by death during 1917 (among them three ex-presidents of the American Library Association): Feb. 16, Henry M. Utley, for 27 years librarian of the Detroit Public Library and since 1917 its librarian emeritus; June 15, William I. Fletcher, for 28 years librarian of Amherst College and till his death librarian emeritus; July 27, James L. Gillis, librarian of the California State Library since 1899; Sept. 13, Henry E. Legler, librarian of the Chicago Public Library since 1909; Feb. 6, Josiah H. Benton, for 22 years a trustee of the Boston Public Library; Oct. 11, George William Harris, for 42 years connected with the library of Cornell University, serving as librarian for 32 years of that time.

The most important appointments of the year are: Charles E. Rush, librarian of the Indianapolis Public Library; Charles Belden, librarian of the Boston Public Library, following eight years in charge of the Massachusetts State Library; Milton J. Ferguson, librarian of the California State Library; John H. Leete, librarian of the Carnegie Library of Pittsburgh; Lawrence Boyd Evans, librarian of the Massachusetts State Library.

During the year, Horace G. Wadlin retired from the librarianship of the Boston Public Library, after 14 years' service, and Eliza Gordon Browning retired from the Indianapolis Public Library after 25 years' service.

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XXXI. CHRONOLOGY AND NECROLOGY

AMERICAN CHRONOLOGY

JANUARY

3.—Lieut.-Col. Chester Harding is named to succeed Maj. Gen. Goethals as governor of the Panama Canal.

5.—The Senate adopts a resolution endorsing President Wilson's request of Dec. 18, 1916, that the belligerent powers state the terms upon which peace may be discussed.

The President names the new Workmen's Compensation Commission.

7.—Mr. Adamson (Dem.) introduces a bill into the House of Representatives forbidding railroad employees to work more than eight hours a day except in emergencies; strikes or lockouts are made illegal without 90 days' notice.

8.—The Senate accepts the Conference Committee report on the Immigration bill, retaining the literacy test.

The Supreme Court upholds the constitutionality of the Webb-Kenyon law, prohibiting shipments of liquor from wet to dry states, and sustains West Virginia's recent measure prohibiting importation of liquor for personal use.

9.—The Senate passes the Sheppard bill for prohibition in the District of Columbia by a vote of 55 to 32.

10.—The Congressional Union for Woman Suffrage posts six silent pickets at the White House gates in response to President Wilson's failure to declare in favor of the proposed Federal suffrage amendment.

11.—The Entente reply to President Wilson's note of Dec. 18, 1916, is received in Washington.

The ammunition plant of the Canadian Car and Foundry Company near Kingsland, N. J., is destroyed by fire, with an estimated loss of $17,000,000.

12.—Four hundred thousand pounds of smokeless powder explode at the du Pont Powder works at Haskell, N. J., causing damage estimated at $1,500,000.

13.—The House of Representatives adopts resolutions instructing the Rules Committee to proceed with an investigation of an alleged "leak" between the White House and Wall Street in connection with advance information of the President's peace note.

The U. S. protected cruiser *Milwaukee* runs ashore on the California coast while attempting to salvage the stranded submarine H-3.

15.—The American-Mexican Joint Commission is formally dissolved without reaching a solution of difficulties arising in connection with the border patrol.

The Supreme Court upholds the Mann White Slave Traffic Act, and refuses to limit the law to commercialized vice.

In a tie decision it decides the railway mail "divisor" case, involving payment to railroads of more than $35,000,000, adversely to the Chicago and Alton and the Yazor and Mississippi Valley Railroads.

19.—The House of Representatives passes a Public Buildings bill (234 to 92) involving the appropriation of $38,000,000.

20.—Secretary Baker announces that the War Department has ordered the immediate withdrawal of a substantial number of National Guardsmen from the Mexican border. The number is later announced as 25,243.

22.—President Wilson addresses the Senate on American participation in a League for Peace, declaring that the peace which is to endure can be based on the victory of neither belligerent.

A sentence of two years' imprisonment and a fine of $10,000 is imposed upon Franz Bopp and other members of the German consulate at San Francisco on trial for conspiring against the neutrality of the United States.

The U. S. Supreme Court upholds as constitutional the so-called blue sky laws of Ohio, Michigan, and South Dakota in decisions affecting similar laws in 26 states.

24.—The Senate Interstate Commerce Committee rejects for the second time the anti-strike plan urged by the President as a supplement to the Adamson eight-hour law.

25.—The new superdreadnought *Mississippi* is launched at Newport News, Va.

26.—The Senate passes the annual Legislative, Executive, and Judicial bill. The House passes a $38,000,000 Rivers and Harbors bill.

The U. S. destroyer *Sampson* and the French motor bark *Inerilly* collide off Sandy Hook. Both vessels sustain slight damage.

27.—Bernard N. Baker resigns from the new Federal Shipping Board.

The Arizona Supreme Court declares Thomas E. Campbell, Republican, to be the *de facto* governor of Arizona in place of G. W. P. Hunt, Democrat, who claimed re-election.

28.—Secretary of War Baker officially announces that General Pershing has been ordered to withdraw his troops from Mexico at once.

29.—President Wilson vetoes the Immigration bill.

30.—It is decided to send Ambassador Henry P. Fletcher to Mexico City at once, with credentials to be presented to the Carranza government, which will thus be recognized at the *de jure* government of Mexico.

The Federal Shipping Board elects William Denman as chairman.

31.—The Senate passes a bill to make Alaska a prohibition territory.

FEBRUARY

1.—The House of Representatives passes the Democratic Emergency Revenue Bill by a vote of 211 to 196. It also passed the Immigration Bill over the President's veto, by a vote of 285 to 106. The Senate passes the annual Fortifications Bill carrying $51,000,000.

2.—Oregon and Idaho drop alien land legislation opposed by Japan at the request of the State Department.

A bill for statewide prohibition is passed by the Indiana Senate and returned to the House for action on the amendments. Governor Rye of Tennessee and Governor Witheycombe of Oregon sign bills making those states "bone dry."

3.—President Wilson addresses a joint session of Congress, reviewing the submarine controversy and informing them that he has directed that diplomatic relations with Germany be severed.

4.—President Wilson notifies neutral nations of the U. S. break with Germany, and suggests similar action on their part.

5.—By a vote of 62 to 19 the Senate repasses the Immigration bill, including the literacy test, which thus becomes a law in spite of the President's veto.

The withdrawal of American troops from Mexico is completed.

7.—By a vote of 78 to 5 the Senate endorses President Wilson's action in severing diplomatic relations with Germany.

9.—A meeting of the Council of National Defense is called to consider the industrial mobilization of the country.

The governor of Indiana signs a statewide prohibition measure.

President Wilson nominates Raymond B. Stevens (Dem.) of New Hampshire as a member of the Shipping Board.

10.—Two American freighters, the *Rochester* and *Orleans*, leave New York, the first United States vessels to sail for the war zone, since Germany's announcement of unrestricted submarine warfare.

A serious congestion of freight at Atlantic ports results from the reduction in shipping due to the German submarine decree.

President Wilson nominates R. T. Baker of Nevada as Director of the Mint.

12.—President Wilson signs an executive order giving the governor of the Panama Canal virtually unlimited authority for excluding undesirable persons from the Canal Zone.

13.—By a vote of 353 to 23 the House of Representatives passes the largest naval appropriation bill in its history. It carries on appropriation of $363,553,388 and empowers the President to commandeer shipyards and munitions factories.

The Council of National Defense decides to appoint seven committees to undertake the mobilization of the country's war resources. They are as follows: Medicine, Labor, Transportation and Communication, Science and Research, Raw Materials, Munitions, and Supplies.

The Illinois Senate votes for a referendum on statewide prohibition in 1918.

15.—The Senate agrees to amendments to the Post Office Appropriation bill making it a crime to import liquor into dry states and to mail advertisements in states legislating against such advertising. In the House the national prohibition constitutional amendment is favorably reported from the Judiciary Committee.

The South Carolina House of Representatives passes a bill, already passed by the Senate, prohibiting liquor advertising in that state. The Minnesota Senate passes a bill submitting a proposed prohibition amendment to the people in 1918.

16.—President Wilson nominates Thomas G. Patten (Dem.) as Postmaster of New York.

17.—The remaining National Guard units on the Mexican border are ordered to their home states.

19.—Wm. B. Colver (Dem.) and John F. Fort (Rep.), former governor of New Jersey, are nominated by the President for the Federal Trade Commission.

The House of Representatives appropriates $25,000,000 for the purchase of the Danish West Indies in fulfillment of the treaty for that purpose.

20.—The Senate passes a drastic espionage measure by a vote of 60 to 10. Bills are also passed fixing a form of government for the Danish West Indies and for Porto Rico.

21.—By a vote of 321 to 72 the House of Representatives passes the Senate "bone dry" amendment to the Post Office Appropriation bill, affecting 19 States.

The Kansas Senate adopts a "bone dry" liquor bill already passed by the lower house.

The Governor of Ohio signs the Reynolds bill permitting women of the state to vote in the next Presidential campaign.

22.—The House of Representatives passes the Army Appropriation bill of $250,000,000.

The Maine legislature passes a revolution for the submission of the woman suffrage question to popular vote.

23.—Thirteen persons are killed and many injured in a tornado that sweeps over portions of Alabama, Georgia, and Mississippi.

24.—The House of Representatives votes into the Sundry Civil bill an appropriation of $400,000 for an inquiry into the food situation.

26.—President Wilson asks of Congress that it authorize him to arm American merchant ships and to employ any other means that may be necessary to protect American ships and citizens in their legitimate and peaceful pursuits on the seas; and that it grant him sufficient credit to enable him to provide adequate means of protection where these are lacking, including insurance against present war risks. A bill is introduced into the Senate to provide for carrying out the President's recommendation.

The Senate passes a bill appropriating $45,000,000 for flood control on the Mississippi and Sacramento Rivers.

27.—The House Committee on Rules files a report exonerating all public officials and financiers named in the charges of a "leak" on the President's peace note of Dec. 20.

28.—The Senate passes the revenue bill, designed to raise $350,000,000 through special taxes and bond issues by a vote of 47 to 33.

The House of Representatives passes the Senate bill prohibiting the sale of liquor in the District of Columbia, by a vote of 273 to 137.

MARCH

1.—By a vote of 403 to 13, the House of Representatives passes a bill empowering the President to arm merchant ships, but not extending his authority to other instrumentalities.

2.—President Wilson signs the new organic act for Porto Rico.

A. A. Sander, C. N. Wunnenberg, and G. V. Bacon are indicted by the Federal Grand Jury for activities in the U. S. on behalf of the German Secret Service system.

3.—President Wilson signs the $350,000,000 Revenue Bill, the Legislative, Executive, and Judicial Appropriation Bill, the Danish West Indies Government Bill, the Pension Appropriation Bill, and a bill increasing the appropriation for the War Risk Insurance Bureau from $5,000,000 to $15,000,000.

Daniel Willard, President of the Baltimore and Ohio Railroad, is made chairman of the Advisory Commission to the Council of National Defense.

4.—Woodrow Wilson takes the oath of office as President of the United States for his second term.

The second session of the Sixty-fourth Congress ends. The Senate fails to pass the Armed Ship Bill through the opposition of eleven senators who prevent its reaching a vote.

5.—President Wilson repeats the oath of office in the presence of some 50,000 persons.

6.—The U. S. Supreme Court decides that the *Appam*, brought into Hampton Roads over a year ago by a prize crew from the *Moewe*, must be restored to her British owners.

The Supreme Court annuls as unconstitutional the clause in the tariff law granting a five per cent. discount in duties to imports brought in American or "favored nation" ships. It upholds the workmen's compensation laws in cases appealed from New York, Iowa, and Washington.

7.—Maj. Gen. Scott is reappointed Chief of Staff.

Serious floods on the Tennessee River leave 7,000 persons homeless.

8.—At a special session the Senate by a vote of 76 to 3 adopts a resolution whereby debate on any particular bill may be limited.

9.—President Wilson calls Congress in extra session for April 16. At the same time he announces that he is convinced that he has full power to furnish arms at once to American merchant vessels to enable them to protect themselves against attack.

11.—A tornado in Eastern Indiana kills nineteen persons at Newcastle.

12.—The four railroad brotherhoods call a strike of freight engineers, firemen, conductors and trainmen for Mar. 17, as a part of the eight-hour day fight.

13.—The Senate Foreign Relations Committee orders a favorable report on an amended form of the Colombian treaty.

14.—The U. S. Circuit Court of Appeals sustains the constitutionality of the $1 war tax on each $1,000 capital used by trust companies and banks, passed by Congress Oct. 22, 1914.

President Wilson nominates Professor F. W. Taussig (Ind.), D. C. Roper (Dem.), D. J. Lewis (Dem.), Wm. Kent (Ind.), W. S. Culbertson (Rep.) and E. P. Costigan (Prog. Rep.) as members of the Tariff Commission.

15.—The Navy Department places contracts with private builders for four great battle cruisers and six scout cruisers.

Governor Hiram W. Johnson of California resigns to enter the U. S. Senate.

16.—The special session of the Senate ends without action on the Colombian treaty.

17.—The railroad brotherhoods postpone the threatened strike 48 hours and resume negotiations with the managers.

19.—Following a statement by President Wilson that the railroad strike must be prevented at all hazards, the Committee representing the railroad managers authorized the Board of Mediation to make whatever arrangements are necessary to call off the strike. Secretary of the Interior Lane accordingly issues a statement that the basic eight-hour day will go into effect.

The U. S. Supreme Court upholds the constitutionality of the eight-hour day by a vote of 5 to 4. The right of Congress to enforce arbitration is sustained.

20.—American copper producers agree to reduce the price of copper 50 per cent. for American army and navy uses for one year.

21.—President Wilson issues a proclamation calling Congress in extra session on April 2.

The Federal War Risk Insurance Bureau increases its rate to 3 per cent. on all ships passing through the war zone.

23.—A tornado at New Albany, Ind., kills 33 persons and does much property damage.

24.—The Navy Department awards contracts for the construction of 24 destroyers.

25.—President Wilson issues an order increasing the authorized strength of the Navy to 87,000 men. Secretary Daniels appeals for enlistments.

Units of the National Guard in nine Eastern States and the District of Columbia are called by the War Department for police purposes.

26.—Additional National Guard units, embracing about 25,000 men from 18 western States, are called to Federal service.

The authorized enlisted strength of the Marine Corps is increased to 17,400.

28.—Rear Admiral James H. Oliver is named as governor of the former Danish West Indies, to be known henceforth as the Virgin Islands.

29.—The class of 1917 of the U. S. Naval Academy is graduated three months ahead of time and detailed to duty.

31.—The United States formally takes possession of the Danish West Indies—now the Virgin Islands.

By executive order President Wilson places all postmasters of the first, second, and third class under civil service rules.

APRIL

2.—The Sixty-fifth Congress assembles in extra session; the House elects Champ Clark speaker; President Wilson delivers a message in joint session of the two houses calling for a declaration of war against Germany and provision for full coöperation with the Allies; resolutions declaring a state of war are introduced in both houses.

4.—The Senate passes the war resolution by a vote of 82 to 6.

5.—President Wilson issues an order establishing defensive sea areas about harbor entrances.

6.—The House passes the war resolution by a vote of 373 to 50; President Wilson signs it and issues a proclamation declaring a state of war with the German Empire; the Government seizes 91 German and Austrian merchant vessels in United States ports, and orders the summary arrest of 60 alien enemies.

The Senate adds to the General Deficiency bill an emergency war appropriation of $100,000,000.

Secretary Daniels orders the mobilization of the navy and the transfer to the control of the Navy Department of the Naval Militia, naval reserves, and Coast Guard.

Fire destroys a large amount of property in Asbury Park, N. J.

7.—The Navy Department assumes control of all wireless stations in the United States.

9.—The Supreme Court hands down decisions declaring price fixing by license illegal and void, and upholding the constitutionality of the Oregon minimum-wage and ten-hour laws.

The Government seizes 14 Austrian ships in United States ports.

10.—The plant of the Eddystone Ammunition Corporation at Chester, Pa., is destroyed by an explosion, with a loss of 122 lives.

11.—Herbert C. Hoover, head of the American Commission for relief in Belgium, accepts the chairmanship of a food board under the National Defense Council.

12.—President Wilson calls into the Federal service over 10,000 of the National Guard stationed in the East and South.

Thomas F. Smith (Dem.) is elected to the House of Representatives from the 25th District of New York.

14.—The House passes unanimously a bill authorizing a war loan of $5,000,000,000 in bonds and $2,000,000,000 in Treasury notes, and the loan of $3,000,000,000 of the proceeds to Entente countries.

President Wilson by executive order creates a Committee on Public Information with George Creel as chairman.

17.—The Senate passes unanimously the bill authorizing a war loan of $7,000,000,000.

Bituminous coal mine operators and miners in conference at New York reach an agreement for a 20 per cent. wage increase in the central field.

18.—Both houses of Congress pass a bill permitting the Entente Allies to recruit their subjects resident in the United States.

22.—The British war commission arrives at Washington.

23.—The Supreme Court hands down a decision discharging H. Snowden Marshall and declaring that the House of Representatives had no authority to punish him for alleged contempt.

The Supreme Court decides in favor of the Government and against the Southern Pacific in the Oregon-California land case.

The battleship *New Mexico* is launched at the Brooklyn Navy Yard.

24.—The French war commission, headed by M. Viviani, Minister of Justice, and Marshal Joffre, lands at Hampton Roads.

25.—Secretary of the Treasury McAdoo delivers to a representative of the British Government a loan warrant of $200,000,000.

Anthracite coal operators and miners' representatives in conference in New York sign an agreement for a wage increase of 11 to 35 per cent.

26.—The State Department announces Elihu Root's acceptance of the chairmanship of a special diplomatic mission to Russia.

27.—An explosion and fire in the Hastings mine at Trinidad, Col., entrap 120 miners.

28.—Both houses of Congress pass the Military Service bill; the Senate adopts an amendment permitting the raising of four volunteer divisions for immediate service in France.

29.—President Wilson issues an executive order providing for a censorship of cables and of telegraph lines into Mexico.

30.—The Senate passes a resolution authorizing the President to take title to and put in service German-owned ships in American ports.

The House Appropriations Committee reports a bill appropriating $2,699,485,281.18 for war expenses during the first year of the war.

A Cuban military commission arrives at Washington.

MAY

1.—The Senate passes a bill appropriating $10,000,000 for the purchase and distribution of nitrate fertilizers.

President Wilson approves temporary war loans of $100,000,000 each to France and Italy.

2.—The governors of 44 states meet in Washington in conference with the Council of National Defense.

The House passes the Urgent Deficiency bill appropriating $2,827,000,000 for war expenses.

4.—The House passes the Espionage bill with a press-censorship provision adopted after rejection of the provision favored by the Administration.

5.—The House passes a bill authorizing an increase in the gold reserve of Federal reserve banks.

Count Tąvenowski, Austro-Hungarian Ambassador-designate, sails from New York with a large party of Austrian and German officials.

7.—The War Department announces the issuance of orders for the formation of nine regiments of engineers to be sent to France for railroad work on lines of communication.

The House passes the resolution authorizing the President to put into service enemy vessels seized in American ports.

The Interstate Commerce Commission opens hearings on the request of the railroads for a 15 per cent. advance in freight rates.

8.—The House passes a bill increasing the war strength of the Navy to 150,000 men and of the Marine Corps to 30,000.

Prominent American socialists in conference at Washington issue a statement denouncing the proposed international socialist conference at Stockholm as a German plot.

9.—The U. S. Government arranges to advance $12,500,000 a month for six months to the American Belgian Relief Commission for its relief work in Belgium and northern France.

The U. S. Shipping Board announces the purchase of seven Austrian steamships held by an American corporation.

The United States Railroad Commission to the Russian Government leaves Washington for Petrograd.

10.—The conferees on the Army Service bill reports a compromise measure to both houses.

President Wilson creates a Red Cross War Council with Henry P. Davison as chairman.

12.—President Wilson signs the Army Appropriation bill.

14.—The Secretary of the Treasury issues a circular announcing the terms and inviting subscriptions to the Liberty Loan of $2,000,000,000.

The Senate passes the Espionage bill without a press-censorship provision but with an embargo clause.

President Wilson orders the immediate expansion of the regular army to its full war strength of 293,000 men by the creation of 45 new regiments.

15.—The Senate passes the bill increasing the enlisted strength of the Navy to 150,000 and of the Marine Corps to 30,000.

16.—The House adopts the conference report on the Army Draft bill, with a provision authorizing the President to raise four divisions of volunteers.

The U. S. Government loans $100,000,000 to Russia.

A Federal regulation forbids any unnaturalized German from going within half a mile of any State armory after June 1 without a Federal permit.

17.—The Senate adopts the conference report on the Army Draft bill.

18.—President Wilson signs the Army Draft bill and issues a proclamation fixing June 5 as the date for the registration of males between the ages of 21 and 31; announces that he will not avail himself of the authority granted to call for volunteers; and orders the mobilization of the entire organized militia.

19.—The Senate amends and passes the Urgent Deficiency bill.

20.—Franz von Rintelen, David Lamar and H. B. Martin are convicted by a jury in the U. S. District Court at New York of conspiracy to violate the Sherman Act by interference with shipments of munitions to the Allies; the jury disagrees in the cases of Frank Buchanan, H. Robert Fowler, Jacob A. Taylor and Herman Schulteis.

Two American Red Cross nurses on board the liner *Mongolia* are killed by fragments from a defective shell.

21.—The Federal Trade Commission reports to Congress a recommendation for Government control of the coal industry.

Fire destroys property valued at $3,500,000, including 1,563 buildings, in Atlanta, Ga.

22.—The Administration Food Control bill is introduced in the House.

The Senate passes a bill appropriating $50,000,000 for the creation of a Bureau of War Risk Insurance.

President Wilson signs the bill increasing the authorized strength of the Navy and the Marine Corps.

A Federal grand jury at Detroit indicts Albert Kaltschmidt and 12 others on charges of conspiracy to destroy munitions plants in Detroit and in Canada.

23.—The House passes the War Revenue bill, levying taxes of $1,857,000,000.

24.—A Federal grand jury at Boston indicts 88 concerns on charges of conspiracy to monopolize interstate trade in unions.

President Wilson receives the Italian War Commission headed by Prince Udine.

Samuel Gompers declines on behalf of the American Federation of Labor to participate in a labor peace conference at Stockholm proposed by Dutch labor leaders.

27.—Nearly 300 persons are killed and over 1,200 injured in two days by tornadoes in Illinois, Indiana, Kentucky, Tennessee, Arkansas and Alabama.

28.—The House passes the Lever bill, appropriating $14,770,000 for a census of food resources.

31.—The House rejects the conference report on the Espionage bill and returns it to conference, with instructions to eliminate the press-censorship provision.

JUNE

1.—The Government calls upon the Federal reserve banks for a loan of $200,000,000 on Treasury certificates.

2.—The Senate passes the Food Regulation bill.

A Federal grand jury at Chicago indicts Baron Kurt von Reiswitz, former German consul-general, and 13 others, including nine Hindus, on charges of conspiracy to foment a revolution in India.

3.—Harry F. Perissi, an Austrian citizen, and two others are arrested in New York charged with operating a secret mail service out of the United States for the messages of German spies; Herman Frencke, a German engineer, is arrested on the following day.

5.—Nearly 10,000,000 men between the ages of 21 and 31 throughout the United States are registered for selective conscription.

A revolt in the Illinois State Prison at Joliet is suppressed by state troops.

7.—The House adopts the conference report on the Espionage bill.

9.—Scores of miners are killed by a fire in the Spectator and Granite Mountain mines at Butte, Mont.

11.—The Senate Judiciary Committee reports a resolution for a prohibition amendment to the Federal Constitution.

Lord Northcliffe arrives in the United States as head of the British War Commission.

12.—The Senate adopts the conference report on the Espionage bill.

13.—The first transports bearing American expeditionary troops to France sail from the United States.

The Senate adopts the conference report on the Urgent Deficiency bill.

The House passes the Webb bill which authorizes combinations for export trade.

The Senate Committee on Agriculture reports a bill prohibiting the use of cereals for the manufacture of intoxicants during the period of the war.

14.—President Wilson signs a proclamation pardoning nearly 5,000 persons at liberty under suspended Federal sentences.

15.—President Wilson signs the Urgent Deficiency Appropriation bill and the Espionage bill.

The subscription to the Liberty Loan is closed with a total subscription of $3,035,226,850.

16.—The Senate passes the Newlands bill conferring upon the President large war powers over railroads.

17.—The Belgian War Commission arrives in the United States.

20.—President Wilson issues a proclamation calling for 70,000 enlistments in the regular army during the week of June 23-30.

The Federal Trade Commission issues a report recommending Government operation of the railroad, coal mines and coking plants for the duration of the war.

22.—President Wilson signs an order creating an Exports Council and authorizing the Secretary of State to administer the embargo provisions of the Espionage Act.

President Wilson signs a bill to increase the reserves of the Federal reserve banks.

A Rumanian war mission to the United States arrives at a Pacific port.

23.—The House passes the Food Control bill with amendments prohibiting the use of food materials for the manufacture of alcoholic beverages and authorizing the President to seize existing stocks of distilled liquors.

24.—The main dam of the Price River Irrigation Co. at Fairview, Utah, fails.

25.—The U. S. cruiser *Olympia* runs aground off Block Island.

26.—Four hundred coal mine operators in conference with Government officials in Washington pledge themselves to sell their product at a fair and reasonable price.

27.—The House passes the Rivers and Harbors Appropriation bill, carrying appropriations of $27,000,000.

The Senate confirms Lester H. Woolsey of New York as Solicitor of the State Department.

The Senate passes a Daylight Saving bill effective in 1918.

29.—The House passes the bill giving the President wide powers over transportation for war purposes.

The Interstate Commerce Commission hands down a decision denying the railroads a general advance in freight rates but granting some specific increases.

30.—President Wilson issues an order authorizing the Shipping Board to take possession of 87 German ships in American ports at the outbreak of war.

The Secretaries of War and the Navy repudiate the agreement of the coal-production committee of the Council of National Defense with the bituminous operators for a maximum price at the mine of $3 per ton.

Ten persons are killed and many injured by a water tank falling on the deck of the steamer *Christopher Columbus* at Milwaukee.

The U. S. battleship *Idaho* is launched at Camden, N. J.

JULY

1.—Race riots against negroes break out in East St. Louis, Ill.

President Wilson issues a proclamation taking over the property of the Jamestown Exposition Co. at Hampton Roads, Va., for a naval station and base.

Eight persons are killed and many injured by the derailment of a car on the Gorge Railway along the Niagara River.

2.—Martial law is proclaimed in East St. Louis, Ill.; a hundred negroes are killed or wounded and fires set by the rioters destroy much property.

President Wilson promulgates the regulations to govern exemption from military service under the selective draft.

A strike of shipyard workmen begins at New York.

3.—The Secretary of War begins the interception and censorship of press dispatches from France to American news services and newspapers.

The Senate Finance Committee reports

the War Revenue bill, levying taxes of $1,670,000,000.

4.—Abram I. Elkus, late Ambassador to Turkey, arrives in the United States.

5.—The Committee on Public Information revokes the press cable censorship instituted by the Secretary of War.

6.—The Senate rejects an amendment to the Food Control bill prohibiting the manufacture of beer and wines for the duration of the war.

Four prominent German agents are arrested in New York and interned on Ellis Island.

7.—The Senate adopts an amendment to the Food Control bill prohibiting manufacture of distilled spirits during the war and directing the President to take over existing stocks.

Indictments are filed in the U. S. District court at San Francisco against 139 German and Hindu plotters accused of attempts to foment revolt in India and to provision German warships at sea from American ports.

8.—President Wilson issues a proclamation effective July 15, placing under absolute government control the exportation of foodstuffs, fuels, iron and steel, and war materials.

9.—President Wilson issues a proclamation providing for the call and draft of the National Guard into Federal service on Aug. 5.

Emma Goldman and Alexander Berkman, anarchist leaders, are convicted at New York of conspiracy to obstruct the operation of the military laws and sentenced to two years' imprisonment and to pay fines of $10,000.

Six persons are killed and 31 injured by the explosion of a powder magazine at the Mare Island Navy Yard.

10.—John M. Baer, Democrat, is elected to Congress from the First District of North Dakota.

11.—The House passes the Enemy Trade bill prohibiting all commercial intercourse with Germany and her allies during the war.

12.—President Wilson signs an executive order authorizing the Emergency Fleet Corporation to commandeer vessels on the stocks and hasten their construction.

A jury in the U. S. District Court at New York acquits 111 coal concerns prosecuted by the Government under the anti-trust law.

Eleven hundred I. W. W. strikers and agitators are deported from Bisbee, Ariz.

13.—A Presidential order is issued drafting into military service 678,000 men to be selected from those registered on June 5.

14.—The House passes the Aviation bill appropriating $640,000,000 for the construction of an air fleet for service in France.

President Wilson issues a proclamation prohibiting German insurance companies from underwriting marine and war-risk business in the United States.

15.—The organized militia of 11 states is mobilized for war service.

17.—Sixteen suffragists arrested in Washington on the 14th for picketing the White House are sentenced to 60 days in the workhouse.

Edward E. Pratt resigns as Chief of the Bureau of Foreign and Domestic Commerce.

18.—Secretary Daniels orders censorship of all trans-Atlantic cable messages.

19.—President Wilson pardons the 16 suffragists serving workhouse sentences in Washington.

20.—The drawing for the first draft of the national army is held at Washington.

The State Department announces the release to the Mexican Government of 2,700,000 rounds of ammunition held at the border under the embargo.

President Wilson nominates Roland S. Morris of Philadelphia as Ambassador to Japan.

21.—The Senate passes the Food Administration bill with provisions for a food-control board of three members and for a joint Congressional committee on war expenditures; the Senate also passes the Aviation bill without amendment.

24.—President Wilson accepts the resignation of Gen. George W. Goethals, general manager of the Emergency Fleet Corporation, and William Denman, chairman, and John B. White, a member, of the Shipping Board; he appoints Adm. W. E. Capps to succeed General Goethals and nominates Edward N. Hurley as chairman, and Bainbridge Colby as a member, of the Shipping Board.

President Wilson signs the Aviation bill.

Five men are killed by an explosion on board the submarine *A-7* at Cavite, Philippine Islands.

25.—The second increment of the National Guard, about 150,000 men, are drafted into the Federal service.

The Senate confirms the nomination of Edwin N. Hurley as chairman of the Shipping Board.

26.—The Senate passes the Rivers and Harbors Appropriation bill, carrying an appropriation of $25,000,000.

Secretary of the Treasury McAdoo submits to the House estimates for additional appropriations for the army amounting to $5,000,000,000.

Three men are killed and several injured in race riots in Chester, Pa.

Theodore Brent resigns as a member of the Shipping Board.

27.—Governor James E. Ferguson of Texas, the Secretary of State, and the State Commissioner of Banking and Insurance are arrested on indictments charging misapplication of public funds.

28.—The organization of a War Industries Board of seven and of a Central Purchasing Committee of four members is announced.

AUGUST

1.—The Senate adopts a resolution to amend the Federal Constitution to provide for nation-wide prohibition.

Frank Little, an I. W. W. leader, is lynched at Butte, Mont.

The Senate confirms the nomination of Roland S. Morris of Philadelphia as Ambassador to Japan.

2.—President Wilson nominates Hoffman Philip to be Minister to Colombia, and George Pratt Ingersoll to be Minister to Siam.

3.—The House adopts the conference report on the Food Control bill.

4.—The Emergency Fleet Corporation takes over 675 steel ships above 2,500 tons under construction at 25 shipyards.

5.—James W. Gerard, late Ambassador to Germany, publishes in the Philadelphia *Public Ledger* an autograph message of the German Emperor to President Wilson of Aug. 10, 1914, in which he explains Germany's entrance into the war and justifies the invasion of Belgium on strategic grounds.

The third and final increment of the National Guard is drafted into Federal service.

8.—The Senate adopts the conference reports on the Food Control and Food Survey bills.

The Senate confirms the nomination of Bainbridge Colby as a member of the Shipping Board.

10.—The Senate passes a bill to encourage the development of potash deposits on public lands.

President Wilson signs the Food Administration bill and appoints Herbert C. Hoover Food Administrator.

11.—Secretary Lansing announces that no passports will be granted to American delegates to the proposed conference at Stockholm.

12.—Herbert C. Hoover announces the appointment of a commission headed by Harry A. Garfield to fix the price of wheat.

13.—A Japanese war mission to the United States arrives at a Pacific port.

Nineteen are killed and 50 injured in a collision on a trolley line at North Branford, near New Haven, Conn.

Lieut. Irving F. Schneider of the German Navy is arrested in San Francisco as a spy.

14.—The War Department announces the organization of the first National Guard division for service in France.

A grand jury at Belleville, Ill., indicts 105 persons on charges connected with the race riots in East St. Louis, on July 1-3.

Both houses of the Porto Rican Legislature adopt resolutions, addressed to President Wilson, appealing for complete self-government.

President Wilson sends to the Senate the nominations of 184 general officers for the National Army.

15.—Herbert C. Hoover forms a $50,000,000 corporation owned wholly by the Government to control the wheat market.

President Wilson nominates Victor Murdock of Kansas as a member of the Federal Trade Commission.

16.—The Food Administration rules that the production of distilled spirits for beverage purposes must cease at 11 p.m. on Sept. 8.

Pope Benedict's peace note is received and published at Washington.

17.—J. W. Phipps and W. V. McCoy are convicted by a jury at Big Stone Gap, Va., of recruiting men with the aid of Germany money to destroy military supplies, and are sentenced to five years' imprisonment.

18.—Senator Gore of Oklahoma offers an amendment to the War Revenue bill prohibiting the sending of drafted men for foreign service without their consent.

19.—Twenty-six I. W. W. leaders are arrested by Federal troops at Spokane, Wash.

20.—President Wilson appoints Robert S. Lovett Federal agent under the Priority Shipments Act and directs 46 railroads to give precedence to bituminous coal shipments going to the Northwest.

The Senate confirms the nomination of Victor Murdock as a member of the Federal Trade Commission.

A general strike of construction workers and harvest hands in the Northwest, called by the I. W. W. leaders, is a complete failure.

The U. S. District Court at Atlanta, Ga., affirms the constitutionality of the selective draft.

21.—President Wilson issues an order fixing the price of bituminous coal at the mine at approximately $2 per ton.

Striking shipyard workers in New York order their leaders to call a strike in all the yards in the port, including the New York Navy Yard.

President Wilson nominates John W. Garrett of Baltimore as Minister to the Netherlands.

23.—President Wilson issues an order appointing Harry A. Garfield Coal Administrator and fixing the price of anthracite coal at the mine at $4 to $5.30 a ton.

Seventeen persons are killed and many injured in riots at Houston, Texas, begun by negro soldiers of the 24th U. S. Infantry; the city is placed under martial law.

24.—The State Department publishes a note expressing confidence in the outcome of Russia's political and military crisis, and the Treasury Department announces a loan of $100,000,000 to the Russian Government.

Secretary McAdoo announces the formation of a commission of three Americans, headed by Bernard M. Baruch, to make purchases for the American, British, French and Russian Governments.

The Texas House of Representatives presents to the Senate nine articles of impeachment against the Governor, James E. Ferguson.

27.—President Wilson, replying to Pope Benedict's peace note, declares that Germany's present rulers cannot be trusted to make an enduring peace and that the German people must find the way or suffer complete defeat.

President Wilson issues a proclamation, effective Aug. 30, placing under the control of the Exports Administration Board practically all articles of commerce and prohibiting their export to European neutral countries except under license.

28.—Governor Burnquist of Minnesota issues a proclamation prohibiting the People's Council of America for Democracy and Peace from holding a proposed Labor Day meeting in Minneapolis or elsewhere in the state.

30.—President Wilson issues a statement fixing $2.20 per bushel as the basis price of the 1917 wheat crop.

31.—The U. S. District Court at Greensboro, N. C., declares the Child Labor Act unconstitutional.

SEPTEMBER

5.—The Senate adopts the section of the War Revenue bill providing for a graduated tax on war profits.

Federal agents raid the headquarters of the I. W. W. in all important cities and the headquarters of the Socialist party in Chicago; Wm. D. Haywood, president of the I. W. W., is arrested in Chicago.

6.—The House passes a bill authorizing bond issues totaling $11,538,945,460.

7.—President Wilson orders an embargo from Sept. 10 on the exportation of gold and currency except under license of the Secretary of the Treasury.

Dudley Field Malone resigns as Collector of the Port of New York in dissatisfaction with the attitude of the Administration towards woman suffrage.

8.—The House adopts a resolution for an inquiry into the quality of ammunition purchased for the American forces in France.

Three persons are killed and 21 injured by an explosion at the Frankford Arsenal, Philadelphia.

9.—Three I. W. W. anarchists are killed in an attempt to break up a patriotic meeting in Milwaukee.

10.—The Senate passes the War Revenue bill.

Federal officials raid the offices of the Philadelphia *Tageblatt* with warrants for the arrest of six editors and officers on charges of treason.

A special election in Maine results in the defeat of woman suffrage.

12.—The Senate adopts a resolution for the drafting for military service of all friendly aliens in the country.

The Senate passes the Trading with the Enemy bill with a provision requiring German-language newspapers to publish in parallel columns English translations of comments on the Government, the Allies, or any matters relating to the war.

The War Department announces the perfection of a military airplane motor.

13.—The House passes the Soldiers' and Sailors' Insurance bill.

14.—An American submarine sinks at her dock in an Atlantic port.

15.—The Senate passes the bill authorizing bond issues of $11,538,945,460.

A strike of 2,000 shipyard workers begins on the northwest coast.

15.—President Wilson issues a proclamation establishing a licensing system for the sugar industry from Oct. 1.

The Senate Committee on Woman Suffrage reports favorably a resolution embodying the Susan B. Anthony amendment for national woman suffrage.

16.—The Exports Administrative Board issues a list of important commodities exportation of which is practically prohibited.

17.—President Wilson accepts the resignation of Dudley Field Malone as Collector of the Port of New York, and nominates Byron R. Newton, Assistant Secretary of the Treasury.

A strike of 25,000 metal workers begins in San Francisco.

18.—The House passes the Urgent Deficiency Appropriation bill, carrying appropriations of $7,000,000,000.

A strike of 3,500 longshoremen begins at New York.

19.—President Wilson appoints a commission headed by Secretary of Labor Wilson to adjust labor difficulties during the period of the war.

20.—The Senate adopts the conference report on the bill authorizing bond issues totaling $11,538,945,000.

The War Industries Board concludes an agreement fixing the price of copper at 23½ cents a pound.

The conferees on the Trading with the Enemy bill add a provision for a censorship of mail, cable and wireless messages to foreign countries.

Mayor Thomas B. Smith of Philadelphia and two other officials are indicted for conspiracy to commit murder.

The striking longshoremen in New York agree to arbitration and to return to work.

21.—The State Department publishes a message of Count von Bernstorff to the German Government, dated Jan. 22, 1917, asking authority to expend $50,000 to influence Congress in favor of peace and suggesting a declaration in favor of Ireland.

22.—Gen. Tasker H. Bliss becomes Chief of Staff of the Army, succeeding Gen. Hugh L. Scott, retired.

Senator King of Utah produces in the Senate documents showing official connection of the Austrian Embassy with Austrian propaganda in the United States.

Governor James E. Ferguson of Texas is impeached by the Senate on 10 charges of misappropriation of funds.

23.—The Committee on Public Information publishes documents seized in the office of Wolf von Igel showing official connection of Count von Bernstorff with German espionage, plots and propaganda in the United States.

The Department of State publishes documents showing German plots to use disease germs and high explosives in Rumania prior to her declaration of war.

Federal mediators adjust the strike of 30,000 ironworkers in San Francisco.

24.—The House adopts a special rule to create a Committee on Woman Suffrage.

24.—President Wilson approves a voluntary agreement of steel manufacturers and the War Industries Board fixing the price of fabricated steel at a maximum of $65 per ton.

25.—The Senate passes the Urgent Deficiency Appropriation bill, carrying appropriations of $8,000,000,000.

27.—Secretary McAdoo announces the terms of the second Liberty Loan of $3,000,000,000 to be offered on Oct. 1.

The Shipping Board announces the requisition for Government service on Oct. 15 of all American merchant vessels of over 2,500 tons.

28.—A Federal grand jury at Chicago indicts 168 members of the I. W. W. on charges of seditious conspiracy; Wm. D. Haywood, general secretary, and scores of others are arrested in various parts of the country.

29.—The Senate confirms the nomination of Byron R. Newton as Collector of the Port of New York.

29.—President Wilson nominates Robert W. Woolley of Virginia, Clyde B. Aitchison of Oregon, and George W. Anderson of Massachusetts as members of the Interstate Commerce Commission; and Charles R. Page of San Francisco as a member of the Shipping Board.

OCTOBER

1.—The House adopts the conference report on the War Revenue bill.

The Fuel Administration prohibits temporarily the exportation of coal into Canada from Great Lakes ports.

2.—The Senate adopts the conference report on the War Revenue bill.

The Exports Administrative Board publishes a list of some 600 commodities which may be exported without license except to the Central Powers and contiguous neutral countries.

3.—The Senate adopts the conference report on the War Deficiency Appropriation bill, carrying appropriations of $7,757,434,410.

President Wilson signs the War Revenue bill.

Attorney-General Lewis of New York publishes evidence that Count von Bernstorff, late German Ambassador, furnished $1,700,000 to Bolo Pasha, under arrest in Paris, for the corruption of the French press in the interest of Germany.

4.—The Exports Administrative Board issues an order denying bunker coal to vessels trading with the northern European neutrals.

The House adopts the conference report on the Urgent Deficiency Appropriation bill.

The House passes the Soldiers' and Sailors' Civil Rights bill.

5.—President Wilson signs a bill repatriating Americans enlisted in Allied armies before the United States entered the war.

The State Department publishes five messages between Count von Bernstorff and the German Foreign Office relating to the financing of Bolo Pasha's plot to corrupt the French press.

The Senate adopts a resolution empowering the Committee on Privileges and Elections to investigate alleged disloyal utterances of Senator La Follette.

6.—The first session of the Sixty-fifth Congress is adjourned; President Wilson signs the Urgent Deficiency Appropriation bill and the Soldiers' and Sailors' Insurance bill.

The Bureau of War Risk Insurance announces a reduction of about 25 per cent. in its rates on vessels traversing the war zone.

8.—President Wilson commissions as generals Major-Gens. John J. Pershing and Tasker H. Bliss.

9.—The Navy Department awards contracts totaling $350,000,000 for the construction of destroyers.

10.—President Wilson issues a proclamation vesting in the Food Administration after Nov. 1 wide powers of control over the important foodstuffs.

The State Department publishes three messages from the German Foreign Office to Count von Bernstorff relating to the destruction of Canadian railroads and the encouragement of sabotage in munitions plants.

11.—The Fuel Administration orders the 700 coal mines served by the Pennsylvania Railroad to furnish the company with coal on a *pro rata* basis.

Announcement is made of an agreement between the War Industries Board and the steel manufacturers reducing the price of steel 50 per cent.

12.—The completion of the Catskill water-supply system is celebrated in New York.

13.—The Interstate Commerce Commission grants an application by the Eastern railroads for a reopening of their rate case.

14.—President Wilson issues an order vesting in a War Trade Board, a Censorship Board and other designated bodies the powers conferred by the Trading with the Enemy Act.

15.—The Shipping Board requisitions for Government service all American ocean merchant vessels over 2,500 tons.

A special election in Iowa results in the defeat of a constitutional amendment for state-wide prohibition.

18.—Fifty-eight enemy aliens are arrested at drydocks in Hoboken, N. J.

20.—President Wilson issues a proclamation appointing Sunday, Oct. 28, as a day of prayer for the triumph of American arms.

A picketboat from the U. S. battleship *Michigan* founders in home waters with a loss of 12 lives.

21.—The War Trade Board issues an enlarged embargo list.

22.—A. Mitchell Palmer assumes the office of custodian of enemy property.

Liam Mellowes and Baron Max von Recklinghausen are arrested in New York on charges of conspiracy to foment another rebellion in Ireland; a third conspirator, Patrick McCarton, is reported under arrest at Halifax.

23.—Lieut. Hans Berg and nine other German prisoners escape from the detention camp at Fort McPherson, near Atlanta.

24.—It is announced that all U. S. Army transports are to be taken over by the Navy and manned by naval crews and officers.

25.—President Wilson, addressing a delegation of New York woman suffragists, gives full endorsement to the cause as a state issue.

26.—The Indiana Supreme Court declares unconstitutional a statute extending the municipal franchise to women.

27.—Subscriptions to the second Liberty Loan are closed, with a total of $4,617,532,300.

President Wilson issues an order increasing the authorized price of bituminous coal by 45 cents a ton.

30.—The State Department publishes two messages of Count von Luxburg, dismissed German Minister to Argentina, to the German Foreign Office relating to Germany's political aims in South America.

The United States Government extends to Italy a financial credit of $230,000,000.

R. C. Leffingwell of New York is appointed Assistant Secretary of the Treasury.

Fire at the Locust Point piers in Baltimore harbor destroys property valued at $5,500,000, including munitions and grain for the Allies.

The Federal Trade Commission issues regulations to govern the license of enemy-owned patents for manufacture in the United States.

NOVEMBER

1.—Prohibition goes into effect in Washington, D. C.

2.—The United States and Japanese Governments conclude an agreement recognizing Japan's special interests in China and reaffirming the "open door" policy.

The United States Government extends to Russia a new credit of $31,700,000.

4.—Uniform minimum wage scales are announced by the Shipbuilding Labor Adjustment Board for the Pacific Coast yards.

6.—Elections are held throughout the United States; in New York a woman-suffrage amendment is adopted; in Ohio woman-suffrage and prohibition amendments are rejected; in New Mexico a prohibition amendment is adopted; Schuyler Merritt (Rep.) is elected to Congress from Connecticut, Wilfred F. Lufkin (Rep.) from Massachusetts, and L. H. Beshlin (Dem.) from Pennsylvania; John F. Hylan (Dem.) is elected mayor of New York.

7.—The State Department announces the arrival in England and the purposes of an American delegation to the war conference of the Allies headed by Col. E. M. House.

President Wilson signs a proclamation putting the baking industry under license from Dec. 10.

9.—Benedict Crowell of Cleveland, Ohio, is appointed Assistant Secretary of War, succeeding Wm. M. Ingraham.

13.—Secretary McAdoo announces the appointment of an advisory board on all questions arising from the excess profits section of the War Revenue Act.

14.—The War Department announces a plan for classifying all men registered for military service on the basis of occupation and dependents.

15.—Adm. W. L. Capps resigns as general manager of the Emergency Fleet Corporation.

16.—President Wilson signs a proclamation prescribing registration and surveillance of all enemy aliens, and their exclusion from the District of Columbia, the Canal Zone and waterfront areas in the United States.

19.—President Wilson appoints Daniel Willard chairman of the War Industries Board.

20.—The American Federation of Labor, in convention at Buffalo, pledges its full support to the Administration during the war.

22.—President Wilson confers with representatives of the four railroad brotherhoods to avert a threatened strike for higher wages.

23.—The Bureau of War Risk Insurance reduces its rate on vessels traversing the war zone from four to five per cent.

24.—The Railroad's War Board announces the pooling of all railroads east of Chicago to facilitate freight movement.

The first vessel of the Shipping Board's emergency fleet is launched on the Pacific coast.

Adm. F. R. Harris is appointed general manager of the Emergency Fleet Corporation.

26.—Secretary of the Treasury McAdoo announces the denial of licenses to enemy insurance companies, except life companies, to do further business in the United States.

27.—The Council of National Defense appoints a new War Council, including six members of the Cabinet, to develop closer co-ordination of the Government's war activities.

28.—President Wilson signs proclamations prohibiting the importation of many articles except under license, and extending the list of articles to be exported only under license.

A Federal grand jury at Madison, Wis., indicts Representative John M. Nelson and his son Byron for conspiracy to violate the registration law.

DECEMBER

1.—President Wilson issues an executive order increasing the price of anthracite coal at the mine 35 cents a ton.

American cavalry pursues Mexican bandits across the border near Indio, Tex., and loses one killed in a battle at Buena Vista, Mexico.

Railway trainmen and conductors throughout the United States present demands for a new wage scale representing an increase of about 40 per cent.

3.—The second session of the Sixty-fifth Congress opens. The Secretary of the Treasury submits a budget of $13,504,357,940 for the fiscal year 1918-19.

War Savings Stamps and Thrift Stamps are placed on sale throughout the United States. Their sale is expected to add $2,000,000,000 a year to the Government's war funds.

Representative John J. Fitzgerald of New York announces his resignation from Congress.

4.—President Wilson, addressing Congress in joint session of the two houses, restates the war aims of the United States and calls for an immediate declaration of war on Austria-Hungary; resolutions for this purpose are introduced in both houses.

The War Trade Board issues a blacklist of over 1,600 German firms in Latin America.

5.—Ten men are killed and 25 injured by an explosion in the plant of the Aetna Chemical Co. at Heidelberg, Pa.

7.—The Senate and House pass and President Wilson approves a resolution declaring a state of war to exist with Austria-Hungary.

The Freight Priority Board issues an order giving preferential shipment to fuel, food and government supplies.

The Council of National Defense is reorganized.

8.—The tug *Eugene F. Moran* founders off Atlantic City with a loss of 14 lives.

10.—The U. S. Supreme Court hands down a decision sustaining injunctions restraining labor-union officials from attempting to organize employees of open shops.

President Wilson nominates Thomas B. Love of Dallas, Tex., as Assistant Secretary of the Treasury.

11.—The Senate Committees on Military Affairs and Manufactures decide to open inquiries into the lack of military supplies and the shortage of fuel and sugar.

The House Judiciary Committee reports proposed prohibition and woman-suffrage amendments to the Federal Constitution.

12.—The Senate passes the Webb bill permitting combination of American concerns to promote foreign trade.

The shell-loading plant of the Bethlehem Steel Co. at New Castle, Del., is destroyed by explosion.

14.—The House Committee on Naval Affairs orders an investigation into the Navy Department's conduct of the war.

The War Trade Board assumes complete control of all imports of wool, leather, and certain other commodities essential to the war program.

15.—A new War Council, consisting of the Secretary and Assistant Secretary of War and five ranking officers of the Army is created to consider problems of supply.

One hundred and three I. W. W. members are arraigned in the U. S. Court at Chicago on a charge of conspiracy.

Oscar T. Crosby, Assistant Secretary of the U. S. Treasury, is chosen president of the Interallied Council on War Purchases and Finances.

Col. E. M. House, head of the American Mission to Europe, returns.

17.—By a vote of 282 to 128 the House of Representatives adopts a resolution proposing a prohibition amendment to the Federal Constitution.

C. A. Piez is named as general manager of the Emergency Fleet Corporation to succeed Rear Admiral Harris, resigned.

The Governor's mansion of California is wrecked by a powerful explosive bomb.

18.—The Senate passes the House resolution on the prohibition amendment by a vote of 47 to 8; the limit of ratification is 7 years.

The Senate orders inquiries covering the U. S. Shipping Board and the railroad situation.

Maj. Gen. George W. Goethals is appointed Acting Quartermaster General of the Army.

Andrew J. Peters, former Assistant Secretary of the Treasury, is elected Mayor of Boston, Mass.

Two U. S. submarines—*F-1* and *F-3*—collide in home waters; 19 lives are lost.

19.—Mayor Thomas B. Smith of Philadelphia is indicted on charges of contempt of court and conspiracy to violate the election laws in connection with disturbances at the last primaries.

20.—A diplomatic mission from Serbia arrives in the United States.

Secretary Lansing makes public more Luxburg telegrams revealing further evidences that there has been German intrigue in Argentina.

Forty-seven persons are killed and many injured in a railroad collision at Shepherdsville, Ky.

22.—The Arizona Supreme Court seats G. W. P. Hunt (Dem.) as Governor of Arizona, unseating Governor Campbell (Rep.).

24.—Twelve rear admirals, 51 captains, and 123 commanders are named by the Navy Selection Board and approved by the President.

Sixteen persons are killed in a trolley accident in Pittsburgh.

26.—President Wilson issues a proclamation announcing that on Dec. 27 the railroads of the United States will be taken over by the Government and operated under the direction of Wm. G. McAdoo.

U. S. troops kill eight Mexican bandits following a raid on Dec. 25 in which a U. S. mail carrier and two Mexicans were killed.

29.—Director General McAdoo issues a formal order directing the pooling by the railroads of all traffic, common utilization of all facilities, haulage of freight by the shortest routes, and the retention of present employees.

31.—The Railroads War Board is dissolved and an official advisory board to the Director General of Railroads is appointed.

The War Department takes over the great piers and warehouses of the Bush terminal in New York City.

FOREIGN CHRONOLOGY

JANUARY

1.—Washington is notified that the Turkish government has declared its independence of the collective suzerainty of Great Britain, France, Italy, Russia, Germany, and Austria-Hungary, and has been recognized as an independent state by Germany and Austria.

The importation, manufacture and sale of intoxicating liquors are absolutely prohibited in Newfoundland.

2.—Great Britain, France, and Italy are reported to have recognized the new Arabian kingdom of Hejas, established by the Grand Sheriff of Mecca after the revolt against Turkey which took place in July, 1916.

5.—An earthquake in Central Formosa kills 300 persons.

Francesco Villa is defeated at Jiminez by Constitutionalist troops, with a loss of over 1,500 men.

6.—Gen. Emiliano Chamorro is inaugurated president of Nicaragua.

9.—Alexander Trepoff, Premier of Russia, resigns, and is succeeded by Prince Golitzine.

11.—A new war loan, bearing 5½ per cent. and known as the Victory Loan, is launched in Great Britain.

14.—The Japanese battle cruiser *Tsukuba* is destroyed by an explosion in Yokosuka Harbor; 153 lives are lost.

Francisco Villa is reported at the gates of Chihuahua City after defeating the

Carranzistas at Satevo, La Jolla, and Santa Ysabel.

15.—Germany signs treaties with Turkey based on reciprocity and mutual acknowledgment of equal rights.

17.—The German Bundesrath adopts a measure prohibiting the importation of all commodities except by permission of the Imperial Chancellor.

The British government places its third loan ($250,000,000) in the United States, making a total of $906,000,000 borrowed there since the beginning of the war.

18.—Gen. M. A. Beliaeff is appointed Russian Minister of War.

Prince Vaoclaw von Niemoyovski is appointed Viceroy of Poland by the German Emperor.

19.—Sixty-nine persons are killed and 400 injured in a munitions plant explosion near London.

An imperial ukase is issued postponing the convening of the Russian Duma and Imperial Council.

23.—China and Japan exchange final notes for a settlement of the Chengchiatun incident in which Japanese troops clashed with native troops in China.

25.—The Japanese Emperor dissolves the House of Representatives following a violent attack on the present ministry.

The British Treasury is empowered to requisition foreign securities and to compel their holders to make a return on them to the Treasury. The transfer or sale of such securities outside the United Kingdom is forbidden.

26.—Five hundred and fifty persons are reported killed in an earthquake on the Island of Bali in the Malay Archipelago.

27.—President Alfredo Gonzales of Costa Rica is deposed by the military forces of the capital; Federico Tinoco, Minister of War, is made provisional chief of the executive.

31.—Delegates to the Mexican Constitutional Assembly sign the new constitution.

FEBRUARY

1.—The Canadian Parliament votes a war credit of $550,000,000 for the ensuing year.

5.—The new Mexican constitution is promulgated.

11.—Revolts occur in Santa Clara and Havana Provinces, Cuba, due to dissatisfaction over the disputed presidential election in November.

12.—Bonar Law introduces into the House of Commons two new votes of credit, aggregating $2,750,000,000.

Cuban rebels seize Santiago.

Ignacio Bonillas is named as Mexican Ambassador to the United States.

13.—President Menocal calls for volunteers to suppress the uprising in Cuba.

14.—Great Britain takes over the control of all coal mines for the duration of the war.

The United States warns Cuba that any government established by revolt will not receive its support and confidence.

Jose Salazar and his Villa command occupy Ojitos, an American owned cattle ranch in Mexico.

15.—The British government makes Halifax an examining port for neutral eastbound vessels.

Dr. Georg Michaelis is named as Prussian Food Minister.

16.—The French Chamber of Deputies adopts a bill permanently advancing the legal time one hour during summer.

17.—Loyal Cuban troops take the rebel cities of Sancti Spiritus and Ciego de Avila.

18.—Henry P. Fletcher, American Ambassador, is received in Mexico with military honors.

19.—A new Australian coalition ministry headed by William L. Hughes is sworn into office.

23.—In a special session of the House of Commons Premier Lloyd George outlines a program calling for increased food production and the curtailment of non-essential imports. The War Cabinet issues a decree barring the importation of a wide range of goods.

26.—Subscriptions to the British Victory Loan are announced as amounting to $5,000,000,000.

27.—The Canadian Minister of Finance announces the opening of the third Canadian war loan of $150,000,000 on Mar. 12.

MARCH

1.—The sale of alcoholic liquors is temporarily suspended in Denmark.

2.—Announcement is made of the retirement of Dr. Wu Ting-fang, Chinese Foreign Minister.

4.—The Chinese Premier resigns following the failure of the President to approve the Cabinet's decision for a break with Germany.

The Central American Court of Justice declares that Salvador's rights were infringed by Nicaragua's treaty with the U. S. for the establishment of a naval base in Fonseca Bay.

5.—The Swedish Cabinet resigns, but at the request of the King consents to remain in office provisionally.

7.—The Irish Nationalists introduce a resolution into the House of Commons calling for the immediate application of the home rule statute to Ireland. They reject proposals for self government which will exclude Ulster.

General José Gomez, leader of the Cuban revolution, is captured by government forces, after a sanguinary battle near Placetas.

Serious political disturbances are reported in various parts of Peru.

8.—Four hundred men from American warships land at Santiago at the request of the civil authorities.

10.—The Russian Tsar suspends the sittings of the Duma and Council of Empire.

Three persons in Great Britain are found guilty of a plot to murder Lloyd George and Arthur Henderson.

It is announced that Austria-Hungary has proclaimed the autonomy of Albania under its protectorate.

11.—Presidential and Congressional elections are held in Mexico. Venustiano Carranza is chosen president by a large majority.

Food riots are reported in Petrograd.

14.—In a speech before the Prussian

Diet Chancellor von Bethmann Hollweg pledges governmental reforms after the war.

Gen. Lyautey resigns as French War Minister.

15.—Emperor Nicholas of Russia abdicates on behalf of himself and the heir apparent, and Grand Duke Michael Alexandrovitch is named as Regent. The ministry, charged with corruption and incompetence, is swept out of power, and a new national cabinet headed by Prince Lvoff, with Paul N. Milukoff as Foreign Minister, is named.

Admiral Lacaze, French Minister of Marine, becomes Minister of War *pro tem.*

Andrew Bonar Law introduces a supplementary vote of credit for $320,000,000 into the House of Commons.

The British government announces that there have been important additions and modifications in its embargo list of May 10, 1916.

16.—The Grand Duke Michael issues a manifesto declaring that he will accept the Russian throne only with the consent of the people. The government is provisionally vested in the Executive Committee of the Duma and the newly elected Council of Ministers.

17.—The French Cabinet, headed by Premier Briand, resigns.

18.—Grand Duke Michael of Russia formally abdicates.

19.—Alexandre Ribot becomes Premier of France and announces the formation of a new Cabinet.

It is reported that Japan has purchased from Portugal the island of Macao at the entrance of the Canton River.

22.—The United States formally recognizes the new Russian government.

25.—American sailors are withdrawn from Santiago.

29.—A program for electoral reform, including woman suffrage, is approved by a majority of 279 of the British House of Commons.

Constitutional guarantees are suspended in Spain following threats of a general strike.

30.—By a vote of 227 to 33 the German Reichstag adopts a resolution appointing a committee of twenty-eight to examine constitutional questions.

The Russian government announces its wish that Poland choose its own form of government.

APRIL

1.—Federico Tinoco is elected President of Costa Rica.

Rigoberto Fernandez and Loreto de Mola, leaders of the Cuban revolt, are captured by an American cruiser off the coast of Haiti.

4.—The Russian Government repeals all laws limiting religious rights.

7.—The German Emperor issues a rescript to the Imperial Chancellor ordering him to submit a plan for the reform of the Prussian electoral law after the conclusion of peace.

The Austrian Government announces the proceeds of its fifth war loan as $1,246,922,000.

10.—The Argentine Government issues a declaration of its support of the position of the United States in reference to Germany.

General Ritter von Krobatin, Austro-Hungarian Minister of War, resigns, and is succeeded by Field Marshal von Schleyer.

15.—The Mexican Congress is opened by President Carranza after a suspension of over three years.

Spain protests to the German Government against unrestricted submarine warfare and declares that she will take defensive measures.

16.—Two hundred thousand workers in Berlin metal, wood and munitions factories strike in protest against a reduction in the bread ration.

Subscription to the sixth German war loan is closed with a total of 12,770,000,000 marks.

17.—The British Parliament assembles; the House of Commons passes on second reading a bill extending the life of the Parliament from April 30 to Nov. 30.

George Bathmeteff despatches to the Russian Government his resignation as Ambassador to the United States.

18.—Chen Chin-tao, Chinese Minister of Finance, is removed from the Cabinet under charge of accepting bribes.

19.—Marquis Manuel Garcia Prieto, President of the Spanish Senate, forms a Cabinet, succeeding as Premier Count Romanones, resigned.

20.—Elections to the lower house of the Japanese Diet result in the return of the Terauchi Government.

The British War Commission to the United States, headed by Arthur J. Balfour, the Foreign Secretary, land at Halifax.

21.—The Argentine Government demands of Germany satisfaction for the sinking of the sailing vessel *Monte Protegido.*

Premier Almeida of Portugal and his Cabinet resign.

Demonstrations of protest against food scarcity occur in Stockholm.

23.—The German military authorities end the strike of munitions workers in Berlin and elsewhere by threatening their mobilization in the army.

25.—Alfonso Costa assumes the Premiership of Portugal and forms a Cabinet.

28.—The Brazilian Government issues a proclamation of neutrality in the war between the United States and Germany.

29.—The Cuban Electoral College declares Mario Menocal elected President.

MAY

1.—Venustiano Carranza takes the oath of office as President of Mexico.

The Russian Government addresses to the Allied countries a note assuring them of Russia's firm adherence to the common cause.

General Kashtalinski is killed by a bomb during a May Day demonstration in Petrograd.

2.—It is reported from Buenos Aires that the German Government has offered Argentina apology and reparation for the sinking of the steamer *Monte Protegido.*

Bonar Law introduces in the British

House of Commons a budget estimating expenditure at $11,452,000,000 for the fiscal year 1918.

Lauro Müller, Brazilian Minister of Foreign Affairs, resigns.

4.—Alexander Zaimis, Premier of Greece, completes a Cabinet.

Thilo Pecanha, former President, is appointed Foreign Minister of Brazil.

5.—A general election in Australia results in the return of Premier Hughes and the Nationalists.

7.—José Nestor Gutierrez is elected President of Bolivia.

9.—Great Britain and Sweden reach an agreement for the release of Allied shipping detained in the Gulf of Bothnia and of Swedish shipping detained in British ports.

11.—The Russian Council of Workmen's and Soldiers' Delegates demands that a peace conference be called to meet in a neutral country.

The Haitian Congress authorizes the President to sever diplomatic relations if Germany declines to offer reparation for the lives of Haitians lost in the submarine campaign and guarantees for the future.

13.—General Guchkoff, Minister of War in the Russian Provisional Government, and General Korniloff, commander of the Petrograd garrison, resign.

15.—Chancellor von Bethmann-Hollweg, speaking in the German Reichstag, declines to define Germany's war aims but indicates that Russia may obtain a separate peace on favorable terms.

16.—Lloyd George on behalf of the British Government offers the Irish Nationalists to apply the Home Rule Act at once, excluding six Ulster counties, and proposes as an alternative an Irish convention to arrange a scheme of self-government.

17.—John Redmond rejects Lloyd George's proposed settlement of the Home Rule question but agrees to the proposal for an Irish convention.

The German Reichstag adjourns to July 5.

19.—The reorganized Russian Provisional Government issues a declaration rejecting a separate peace and announcing as its aim a victory for the Allies and a general peace "without annexations or indemnities."

20.—Mario Garcia Menocal is inaugurated President of Cuba for a second term.

22.—Premier Ribot of France, speaking at the opening of Parliament, replies to the Russian declaration for peace "without annexations or indemnities" that France demands reparation and the return of her lost provinces.

23.—The British House of Commons passes the Franchise Reform bill on second reading.

President Li Yuan-hung of China dismisses the Premier Tuan Chi and calls upon Wu Ting-fang to form a new Cabinet.

Premier Count Tisza of Hungary and his Cabinet resign.

26.—The American Ambassador at Petrograd delivers to the Russian Provisional Government a note signed by President Wilson defining the objects of the United States in entering the war.

28.—Li Chaing-hsi is appointed Premier of China but declines.

29.—Count Julius Andrassy is appointed Premier of Hungary.

31.—Emperor Charles opens the Austrian Reichsrat with promises of internal constitutional reforms and assurances of the conciliatory attitude of Austria-Hungary toward reasonable peace terms.

JUNE

1.—Premier Ribot of France announces in the Chamber of Deputies that the Government will issue no passports to French Socialists to attend the proposed peace conference at Stockholm.

The Russian Council of Workmen's and Soldiers' Delegates assumes control of the fortress of Kronstadt and removes the representatives of the Provisional Government.

Eleven provinces of China declare their independence of the government of Li Yuan-hung.

Premier Borden of Canada asks the assistance of Sir Wilfrid Laurier in forming a coalition Ministry.

2.—The military governors of the revolted Chinese provinces form a provisional government at Tien-tsin under the dictatorship of Hsu Shih-chang.

The Brazilian Government seizes 46 German merchant vessels in Brazilian ports.

3.—Italy declares the independence of Albania under Italian protection.

4.—The French Chamber of Deputies adopts a resolution declaring that peace terms must include the liberation of territory occupied by Germany, the recession of Alsace-Lorraine, and indemnity for the damages of invasion.

5.—The Russian Council of Workmen's and Soldiers' Delegates issues a new appeal to the socialist parties and trade unions of the world to unite for action in favor of peace on the basis of no annexations and no indemnities.

A large and riotous labor demonstration in favor of a revision of the Constitution, shorter hours, and higher wages occurs in Stockholm.

7. The American Minister at Peking transmits to the Chinese Government a note expressing the hope of the United States Government that domestic peace be restored forthwith.

The Russians in possession of Kronstadt yield to negotiations and recognize the Provisional Government.

The city of San Salvador and several neighboring towns are destroyed by earthquake.

9.—Premier Marquis Prieto of Spain and his Cabinet resign.

Count Moritz Esterhazy succeeds Count Tisza as Hungarian Premier.

10.—General Chang-hsun, Governor of the revolted Chinese province of Anhwei, delivers to President Li Yuan-hung an ultimatum demanding the dissolution of Parliament within 48 hours.

E. P. Patenaud, Canadian Secretary of State, resigns from the Borden Cabinet in opposition to conscription.

11.—Sir Robert Borden introduces a Conscription bill in the Canadian House of Commons.

12.—King Constantine I of Greece abdicates in favor of his second son, Alexander; French and British troops are landed in Thessaly and Corinth.

Eduardo Dato, appointed Premier of Spain, completes a Cabinet.

13.—The American Mission and the American Railroad Commission to Russia arrives at Petrograd; the Russian Mission to the United States lands at a Pacific port.

President Li Yuan-hung dissolves the Chinese Parliament.

15.—The British Government announces its decision to release all Irish rebel prisoners without reservation.

Baron Rhondda is appointed Food Controller for Great Britain, succeeding Lord Devenport, resigned.

16.—The Russian Council of Workmen's and Soldiers' Delegates adopts a proclamation declaring against a separate peace offered in a message from Prince Leopold of Bavaria.

19.—Premier Count Clam-Martinic of Austria and his Cabinet resign. Dr. von Seydler accepts the Premiership.

The British House of Commons passes the clause of the Electoral Reform bill extending the suffrage to women.

25.—Premier Zaimis of Greece and his Cabinet resign; King Alexander invites Elutherios Venizelos to form a Cabinet.

Sinn Fein riots in Cork, Ireland, are suppressed by the military.

26.—The Spanish Government issues a decree suspending constitutional guarantees.

27.—Premier Venizelos of Greece completes a Cabinet.

28.—The Russian Provisional Government issues a decree fixing Sept. 30 for the elections to the Constituent Assembly.

The Brazilian Government revokes its decree of neutrality.

30.—The Provisional Government of Greece established at Saloniki is merged in the National Government of M. Venizelos.

The Spanish Government issues a decree prohibiting belligerent submarines from entering Spanish ports or territorial waters.

Hsuan Tung, the deposed Manchu Emperor, issues a mandate announcing his restoration to the throne of China.

JULY

3.—Li Yuan-Lung, deposed President of China, takes refuge in the Japanese Legation at Peking.

5.—The German Reichstag is opened.

Boris Bakhmeteff presents his credentials as Ambassador to the United States from Russia.

6.—The Canadian House of Commons passes the Compulsory Military Service bill on second reading.

Vice-President Feng Kuo-chang of China assumes the office of President and establishes the republican Government at Nanking.

7.—Matthias Erzberger, leader of the Clerical Center in the German Reichstag, speaking in a secret session of the Main Committee, advocates peace without annexations or indemnities, and urges the introduction of parliamentary government.

9.—The German Chancellor, von Bethmann-Hollweg, replying in the Reichstag Committee to the attacks of the Socialists and Centrists, repudiates a peace without annexations and refuses to disclose Germany's war aims.

Gen. Chang Hsun, leader of the attempted Manchu restoration in China, resigns his offices and the administration of Peking.

10.—A Sinn Fein revolutionist defeats an Irish Nationalist in a by-election in East Clare on a platform of complete Irish independence.

12.—Chinese republican forces accept the surrender of the main body of monarchist troops at Fung Tai and enter Peking.

The German Emperor issues a rescript ordering a bill for the reform of the Prussian constitution to be drawn up on the basis of equal suffrage.

J. Austen Chamberlain, Secretary of State for India in the British Cabinet, resigns.

13.—President Menocal of Cuba issues a proclamation suspending the constitutional guarantees.

14.—The German Imperial Chancellor, Theobold von Bethmann-Hollweg, resigns; Georg Michaelis, Prussian Under-Secretary of Finance, is appointed Chancellor.

15.—The Norwegian-American liner *Kristianiafjord* runs ashore off Cape Race.

17.—Sir Edward Carson resigns as First Lord of the Admiralty in the British Cabinet and enters the War Cabinet without portfolio; Sir Eric Campbell Geddes assumes the Admiralty portfolio, Winston Spencer Churchill succeeds Dr. Christopher Addison, who remains without portfolio, as Minister of Munitions, and Edwin S. Montague becomes Secretary for India.

King George V issues a proclamation changing the style of his House from that of Saxe-Coburg-Gotha to that of Windsor.

18.—Admiral Delbono enters the Italian Cabinet as Minister of Marine.

19.—Georg Michaelis, the new German Chancellor, affirms Germany's right to a victor's peace and declares that no further peace offers will come from the Central Powers; the Reichstag passes a resolution in favor of peace without forced annexations or indemnities, and votes a war credit of 15,000,000,000 marks.

The Finnish Diet adopts a bill for complete autonomy.

20.—Premier Lvoff of Russia resigns and is succeeded by Alexander Kerensky; M. Tseretelli becomes Minister of the Interior and M. Nekrasoff, Minister of Justice.

The German Reichstag adjourns to Sept. 26.

23.—The Russian Peasants' Council and Council of Workmen's and Soldiers' Delegates in joint session adopts resolutions proclaiming the Provisional Government a Government of National Safety and investing it with unlimited powers to reëstablish the organization and discipline of the army.

24.—The British House of Commons votes a war credit of $3,250,000,000.

Premier Kerensky of Russia completes a Cabinet.

The Chilean and Peruvian Cabinets resign.

25.—The Irish Convention is opened at Dublin; Sir Horace Plunkett is elected chairman.

26.—The Greek Chamber of Deputies is opened by Premier Venizelos.

Michael Stakovich, Russian Governor-General of Finland, resigns.

The British House of Commons rejects a pacifist resolution endorsing the principles expressed in the peace resolution of the German Reichstag.

29.—Count Czernin, the Austro-Hungarian Foreign Minister, affirms the willingness of Austria-Hungary to conclude an honorable peace by understanding, and accuses the Entente of a desire to crush the Central Powers.

2.—Admiral Lacaze, French Minister of Marine, and Denys Cochin, Under-Secretary of Blockade, resign.

AUGUST

Acting President Feng Kuo-chang of China approves a unanimous decision of the Cabinet to declare war on Germany and Austria-Hungary.

3.—M. Tchernoff, Russian Minister of Agriculture, resigns under charges of being connected with the German General Staff; Premier Kerensky and all but one of his Cabinet resign, but later withdraw their resignations with the exception of M. Terestchenko, Foreign Minister.

The Finnish Landtag is dissolved after adopting resolutions admitting the error of proclaiming autonomy without an agreement with the Russian democracy.

The French Chamber is prorogued to Sept. 18.

4.—Representatives of five Russian parties in conference in Petrograd adopt resolutions of confidence in Premier Kerensky and invite him to form his own Cabinet.

The British Government suspends all trans-Atlantic wireless service as a military measure.

6.—The German Government announces the resignation of the Imperial Foreign Secretary, Alfred Zimmermann, the President of Food Regulation Board, Adolph von Batocki, the Postmaster-General, the Secretary of Justice, and five members of the Prussian Cabinet; and the appointment of Richard von Kühlmann as Foreign Secretary.

The British Government announces the appointment of Adm. Sir Rosslyn Wemyss as Second Sea Lord of the Admiralty and also that of Alan Garrett Anderson as Controller of Naval Construction.

8.—The Canadian Conscription bill passes its third reading in the Senate.

10.—Charles Chaumet is appointed Minister of Marine in the French Cabinet.

11.—Arthur Henderson resigns from the British War Cabinet under censure by Premier Lloyd-George for his activities in promoting the participation of British labor in the proposed conference at Stockholm.

The Sinn Fein candidate is elected to the British Parliament in a by-election in Kilkenny.

13.—Andrew Bonar Law announces in the British House of Commons that the British, French, Italian and American Governments will issue no passports to their nationals to attend the proposed international Socialist conference at Stockholm.

A general strike begins in Spain, accompanied by serious rioting.

14.—Former Czar Nicholas of Russia and his family are removed from Petrograd for exile at Tobolsk, Siberia.

Martial law is proclaimed in Spain.

15.—José Gutierrez is inaugurated President of Bolivia.

16.—Premier Lloyd George, speaking in the British House of Commons on the submarine campaign, shows the losses of British shipping to have decreased month by month since April, and the tonnage built and building and the wheat supply to have increased during the year.

The Finnish Cabinet resigns.

17.—John Hodge becomes Minister of Pensions in the British Cabinet; George H. Roberts, Minister of Labor; and A. C. Geddes, Minister of National Service.

19.—Count Johann von Bernstorff is appointed German Ambassador to Turkey.

20.—Robert Rogers, Canadian Minister of Public Works, resigns because of delay in putting into effect the Conscription bill.

An economic convention between Germany and Switzerland is signed at Berne.

Alexander Wekerle is appointed Premier of Hungary, succeeding Count Moritz Esterhazy.

21.—President Meinocal of Cuba signs a decree transferring to the United States Government four German steamships seized in Cuban ports on the outbreak of war.

Donald B. MacMillan, Arctic explorer, arrives at Sydney, C. B.

28.—Germany offers Argentine indemnity for the sinking of the steamer *Toro* and promises to observe international law towards Argentine shipping.

The Governor-General of Canada signs the Military Conscription Act.

29.—The Russian National Conference at Moscow, opened on Aug. 26, ends without practical result.

31.—Louis J. Malvy, Minister of the Interior in the French Cabinet, resigns.

SEPTEMBER

2.—The Austrian Cabinet is reorganized.

3.—Seventy members of the disbanded Chinese Parliament proclaim a military government at Canton, with Sun Yat-sen as commander-in-chief.

4.—The British Trades Union Congress by a large majority rescinds its decision to send delegates to the proposed international conference at Stockholm.

Leaders in an alleged plot to assassinate Premier Borden and Solicitor-General Meighan, and to dynamite the Parliament buildings at Ottawa, are arrested in Canada.

5.—Municipal elections in Petrograd are won by the extreme radical Bolsheviki and Social Revolutionaries.

8.—General Korniloff, Commander-in-Chief of the Russian armies, demands of Premier Kerensky the relinquishment to him of all civil and military power.

Premier Ribot of France and his Cabinet resign.

10.—Premier Kerensky of Russia dismisses General Korniloff as Commander-in-Chief, appoints General Klembovsky, and declares martial law in Petrograd.

12.—Premier Kerensky assumes supreme command of the Russian armed forces and appoints General Alexieff Chief of the General Staff.

13.—General Korniloff's rebellion against the Russian Government collapses.

Martial law is proclaimed in Portugal on account of a general strike.

14.—Premier Paul Painlevé of France completes a Cabinet.

The Uruguayan Government takes possession of eight German steamships in Montevideo harbor.

15.—The Russian Provisional Government proclaims a republic; Premier Kerensky reorganizes the Cabinet.

The German and Austro-Hungarian Governments publish a decree creating a new Polish state, in the form of a constitutional monarchy based on universal suffrage, but reserving supreme control to the occupying powers during the period of the war.

19.—The Argentine Senate adopts a resolution authorizing the breaking of diplomatic relations with Germany.

20.—The central span of the Quebec Bridge is completed.

21.—Swedish elections result in Socialist and Liberal gains.

24.—A general strike begins on the Argentine railroads; the Government orders the mobilization of the navy.

25.—The Argentine Chamber of Deputies adopts a resolution authorizing the breaking of diplomatic relations with Germany.

26.—General Soukhomlinoff, former Russian Minister of War, on trial at Petrograd on charges of treason, is convicted and sentenced to penal servitude for life.

The Peruvian Government instructs its Minister to Germany to demand satisfaction within eight days for the sinking of the bark *Lorton*.

29.—Bolo Pasha, a Levantine financier resident in Paris, is arrested in Paris on charges of being a German agent.

OCTOBER

2.—The British Government proclaims an absolute embargo on all exportation to Scandinavia and the Netherlands.

Premier Swartz of Sweden and his Cabinet resign.

4.—The Canadian Parliament is dissolved.

5.—The Peruvian Congress in joint session of the two houses approves a resolution to sever diplomatic relations with Germany.

8.—The Ecuadorean Foreign Secretary notifies the dismissed German Minister to Peru and Ecuador that he will not be received officially by the Government of Ecuador.

9.—Chancellor Michaelis, speaking in the German Reichstag, declares that peace is impossible as long as Germany's enemies demand German territory or endeavor to drive a wedge between the people and the Kaiser; Foreign Secretary von Kühlmann declares that the only impediment to peace is France's demand for Alsace-Lorraine.

10.—Premier Kerensky of Russia completes a coalition Cabinet.

Prince Fuad, brother of Hussein Kemal, succeeds him as the Sultan of Egypt.

11.—The British Government suspends all commercial cable communication with Holland pending the stoppage of the transport of German war materials on Dutch waterways.

Premier Lloyd-George declares that Great Britain will fight with France until Alsace-Lorraine is redeemed from German oppression.

Count von Luxburg, dismissed German Minister, is arrested by the Argentine authorities and sent to the detention camp situated on Martin Garcia Island.

12.—Premier Borden of Canada forms a coalition Ministry, with half the members Liberals.

Admiral von Capelle, German Minister of Marine, resigns.

16.—The British Parliament reassembles.

17.—The Spanish Cabinet decides to restore the suspended constitutional guarantees; General Primo-Rivera, Minister of War, resigns, and is succeeded by General Marina.

18.—Subscriptions to the latest German war loan are closed, with a total of 12,500,000,000 marks.

The strike of Argentine railway workers is ended.

19.—The French Chamber of Deputies adopts a vote of confidence in the Painlevé Government.

22.—President Poincaré of France refuses to accept the resignation of Premier Painlevé and his Cabinet.

23.—Alexander Ribot, French Foreign Minister, resigns, and is succeeded by Louis Barthou.

25.—The French Chamber of Deputies adopts a vote of confidence in the Painlevé Ministry.

The Italian Chamber of Deputies rejects a vote of confidence in the Government.

26.—Premier Boselli of Italy and his Cabinet resign.

A munitions plant near Vaudreuil, Quebec, is destroyed by explosion, with a loss of $1,500,000.

27.—Premier Dato of Spain and his Cabinet resign.

30.—Count George F. von Hertling succeeds Dr. Michaelis as German Imperial Chancellor.

Vittorio Orlando becomes Premier of Italy and completes a Cabinet.

Chancellor Bonar Law introduces a vote of credit for $2,000,000,000 into the British House of Commons.

NOVEMBER

1.—The Norwegian Government protests to Germany against the sinking of Norwegian ships in the convoy destroyed in the North Sea.

3.—Marquis Manuel Garcia Prieto de Alhuemas becomes Premier of Spain and forms a coalition Cabinet.

6.—The British House of Commons rejects without a division a motion favoring the opening of peace negotiations.

Announcement is made of an agreement between Japan and the United States guaranteeing the independence of China.

7.—The Bolsheviki, led by Nikolai Lenine and Leon Trotzsky and aided by the Petrograd garrison, seize Petrograd, depose Premier Kerensky and arrest several members of his Government, dissolve the Preliminary Parliament, and proclaim a programme for the offer of an immediate democratic peace, the distribution of lands to the peasants, and the transfer of all authority to the Council of Workmen's and Soldiers' Delegates.

8.—Friedrich von Payer, Progressive leader, is appointed Imperial German Vice-Chancellor.

The Chinese Government protests to Japan against the convention with the United States in regard to China.

12.—The Chinese Government protests to the United States against the convention with Japan.

13.—The British House of Commons passes a bill extending the life of the present Parliament to July 30, 1918.

Premier Painlevé of France and his Cabinet resign after defeat on a vote of confidence in the Chamber.

15.—George Clemenceau becomes Premier of France and forms a Cabinet.

Lord Northcliffe declines to enter Lloyd-George's Cabinet.

16.—Premier Tuan Chi-jui of China and his Cabinet resign but are continued in office by President Feng Kuo-chang.

19.—Premier Lloyd-George defends the Allies' plan for a joint war council against attack in the British House of Commons.

21.—The Russian Bolsheviki Government notifies the Allied powers of its offer of an immediate armistice on all fronts and the opening of peace negotiations; General Dukhonin, Bolsheviki commander-in-chief, refuses to obey an order to transmit the offer to the enemy and is removed.

22.—The Griesheim chemical works near Frankfort, Germany, are destroyed by explosion.

24.—Baron Rothermere is appointed Air Minister in the British Cabinet, succeeding Lord Cowdray, resigned.

Boris Bakhméteff, Russian Ambassador to the United States, repudiates the Bolsheviki Government.

26.—The Rada proclaims the independence of the republic of the Ukraine.

28.—The Russian Bolsheviki reorganize their Government to admit representatives of other Socialist groups.

The kings of Denmark, Sweden and Norway meet in conference in Christiania.

DECEMBER

1.—The German Reichstag votes a war credit of 15,000,000,000 marks.

2.—The Chinese Cabinet is reorganized under Wang Chin-chen as Acting Premier.

4.—Bolsheviki forces occupy Mohilev, the Russian general headquarters; General Dukhonin, the deposed commander-in-chief, is murdered.

5.—An agreement for the provisioning of Switzerland is concluded at Paris by American and Swiss representatives.

6.—The steamer *Mont Blanc*, loaded with munitions, explodes in Halifax harbor after collision with the steamer *Imo*; 1,500 persons are killed and a large part of the city is destroyed by the explosion and fires.

Chancellor von Hertling introduces an electoral reform bill in the Prussian Diet.

7.—The Russian Bolsheviki Government issues a decree abolishing law courts and substituting revolutionary tribunals.

The Government of Finland proclaims its independence.

8.—The Portuguese Cabinet resign after a revolutionary outbreak in Lisbon.

9.—The Russian Bolsheviki Government announces a revolt under General Kaledines and Korniloff in the Don region.

11.—Sidonis Paes becomes Premier of Portugal and completes a Cabinet.

The Russian Constitutional Assembly convenes in Petrograd with about 50 members present.

13.—Felix Calonder, Vice-President of Switzerland, is elected President for 1918.

14.—The debate on the Ballot Reform bill is finished in the Prussian Diet, and the measure is referred to a committee.

It is reported that Gen. Kaledine, leader of the Don Cossacks, is under arrest, and that Bolsheviki troops have occupied Rostov, Nakhitchevan, and Tagaurog.

17.—The Union government of Sir Robert Borden is returned and conscription confirmed in Canada.

20.—In a speech before the House of Commons Premier Lloyd-George declares complete restoration of territories occupied by the Central Powers and full compensation for losses caused, as fundamental bases for peace.

21.—Riots occur in Buenos Aires as the people demand a break with Germany.

22.—Premier Borden announces that after Dec. 24 the importation of intoxicating liquors into Canada will be prohibited, and that their manufacture will be prohibited later.

The French Chamber of Deputies adopts a resolution depriving former Premier Caillaux of Parliamentary immunity in accusations which were made against him of treasonable dealings with the enemy.

26.—Vice-Admiral Sir Rosslyn Wemyss succeeds Admiral Sir John E. Jellicoe as Britain's First Sea Lord.

Vilhjalmur Stefansson, the Arctic explorer who has been in the Far North since 1913, is reported at Fort Yukon.

28.—It is announced that the new French war loan of $2,000,000,000 has been oversubscribed.

It is reported that Ferdinand of Rumania has abdicated in favor of the Crown Prince, Charles.

29.—An earthquake in Guatemala City, beginning on Dec. 27, completely destroys the town.

CHRONOLOGY OF THE EUROPEAN WAR

JANUARY

1.—The British transport *Ivernia* is torpedoed and sunk in the Mediterranean, with a loss of 85 lives.

3.—Berlin announces the capture of Matchin and Jijila in Northern Dobrudja, and Barsesci and Topesci on the Moldavian front.

4.—Germans and Bulgarians capture Braila, Rumania.

5.—Russian forces launch an offensive against the Germans in the Riga district, at the northern end of the great battle-line.

British forces under Gen. Smuts in German East Africa reach Kibambwe.

7.—The Inter-allied War Conference convened at Rome on Jan. 6 adjourns. The participants are reported to be in complete accord on various war questions.

8.—It is reported that the Allies have despatched an ultimatum to Greece, demanding prompt compliance with all previous Allied demands. These include the evacuation of Thessaly by Greek forces, the dismissal of the commander of the First Army, and an apology for recent attacks on Allied troops in Athens.

Germans take Focsani and nearly 4,000 prisoners, after a five days' battle.

8.—Field Marshal von Mackensen takes the Rumanian town of Gabreaska and 5,400 prisoners.

British troops in Egypt capture six lines of intrenchments covering the town of Rafa, and take 1,600 Turkish prisoners.

The British warship *Cornwallis* is sunk by a submarine in the Mediterranean.

10.—Greece accepts the terms of the Allied ultimatum with certain reservations.

11.—The reply of the Entente governments to President Wilson's note of Dec. 18 is received at Washington. It declares that the objects which the Allies seek by a continuance of the war will not be made known in detail until the hour of negotiations, but that "they imply in all necessity and in the first instance: The restoration of Belgium, of Servia, and of Montenegro, and the indemnities which are due them. The evacuation of the invaded territories of France, of Russia, and of Rumania, with just reparation. The reorganization of Europe, guaranteed by a stable régime, and founded as much upon respect of nationalities and full security and liberty of economic development which all nations, great or small, possess, as upon territorial conventions and international agreements suitable to guarantee territorial and maritime frontiers against unjustified attacks. The restitution of provinces or territories wrested in the past from the Allies by force or against the will of their populations. The liberation of Italians, of Slavs, of Rumanians, and of Tcheco Slovaques from foreign domination. The enfranchisement of populations subject to the bloody tyranny of the Turks. The expulsion from Europe of the Ottoman Empire, which has proved itself altogether so radically alien to Western civilization."

A separate reply from Belgium declares that she can only accept a peace which would assure her "as well as equitable reparation, security and guarantees for the future."

Germany issues a note to the neutral governments declaring that the reply of the Entente to the German peace proposals makes an answer impossible.

12.—Official announcement is made of the sinking, on Dec. 11, 1916, of the Italian battleship *Regina Margherita* by a mine; 675 men were lost.

14.—Teutonic forces capture the Rumanian town of Vadeni.

Italy announces the capture of the Austrian U-boats *VC-12* and the *VT-12*.

15.—The Japanese steamer *Hudson Maru* arrives at Pernambuco with the crews of several vessels sunk by a German raider, which is said to have been operating in the South Atlantic for the past month. Fifteen merchant ships are said to have been sunk.

The Allied powers insist upon an unqualified acceptance of their demands by Greece.

17.—In a supplementary note to President Wilson Great Britain repeats and amplifies the Allied demand for the expulsion of the Turks from Europe, and mentions specifically the restitution of Alsace-Lorraine to France and Italia Irredenta to Italy.

The Russians retake Vadeni.

Great Britain calls to the colors half the men under 26 now engaged in agricultural work.

19.—The German Admiralty announces that the British steamer *Yarrowdale,* captured by a German raider, was brought into harbor on Dec. 31, carrying 469 prisoners, including a number of American seamen taken from captured steamers.

Word is received by the U. S. State Department that the British steamer *St. Theodore,* captured by the German sea raider in the South Atlantic, has been armed and manned by a German prize crew, and is now operating as an auxiliary cruiser in the Atlantic.

Teuton forces take Nanesti, Rumania, on the River Sereth.

20.—The German government presents a memorial to the U. S. State Department, defending the deportation and compulsory employment of Belgian workmen.

22.—Two engagements take place between British and German naval forces in the North Sea. Each side loses a destroyer.

24.—German troops in the Riga region push back the Russian lines a mile and a half between the Tirul Swamp and the River Aa; 1,500 prisoners are claimed.

25.—German forces capture Russian positions on a front of about 6 miles on the northern end of the Russo-Galician line.

An unidentified German vessel shells the Suffolk coast.

The French transport *Amiral Magon, en route* to Saloniki, is sunk by a submarine; 141 lives lost. The British auxiliary cruiser *Laurentic* is sunk by a mine off the Irish coast; 350 men are lost.

26.—British forces in Mesopotamia capture 1,100 yards of Turkish first-line trenches and portions of the second-line trenches southwest of Kut-el-Amara.

27.—British forces on the Somme front capture a commanding portion of a German position near Le Transloy; French attacks near Hill 304 on the Verdun front are reported repulsed.

Great Britain declares an enlarged area of the North Sea dangerous to shipping because of belligerent operations.

It is learned that the Atlantic Transport Liner *Minnewaska* was sunk by a mine off one of the Greek Islands on Nov. 29, while in transport service.

28.—Russian forces break through the Teuton lines along a front of nearly two miles on the Moldavia-Bukowina border.

31.—In a note to the United States Germany declares her intention of henceforth sinking without warning any merchant vessel, neutral as well as enemy, entering a prescribed zone extending from north of the British Isles around into the Mediterranean. One American vessel a week will be permitted to sail on a prescribed route under certain prescribed conditions. A barred zone is also established for hospital ships.

FEBRUARY

1.—Ten vessels are sunk and 8 lives lost on the first day of unrestricted submarine warfare.

3.—The United States severs diplomatic relations with Germany; Count von Bernstorff receives his passports; German interests in the United States are turned over to the Swiss embassy.

Austria-Hungary declares its adherence to the German submarine policy.

The American steamer *Housatonic* is sunk by a German submarine near the Scilly Islands.

Berlin announces a modification of its submarine blockade zone, broadening the safety zone in the North Sea off the Netherlands coast.

4.—President Wilson notifies neutral nations of the U. S. break with Germany and suggests similar action on their part.

Germany accedes to the U. S. demand for the release of Americans taken prisoner to Germany aboard the *Yarrowdale.*

The British steamer *Turino* is sunk without warning by a German submarine.

5.—The British steamer *Eavestone* is sunk by a German submarine; 4 men are killed. Thirty-one vessels of 41,887 tons have been sunk since Feb. 1, including the Belgian relief ship *Lars Kruse.*

6.—Fourteen ships with a total tonnage of 44,457, including the passenger ship *Port Adelaide,* are sunk in the war zone.

Spain protests to Germany against her new submarine policy.

7.—Germany requests Ambassador Gerard to reaffirm the treaties of 1799 and 1828 with reference to the rights of nationals, residing in either country to continue their residence for 9 months for the purpose of closing up their business.

Ambassador Gerard and his staff are detained at Berlin pending assurance of the safety of Count von Bernstorff and German crews in the United States.

British forces on the Ancre occupy Grandcourt.

Announcement is made of the sinking of the British ship *California* without warning, off the coast of Ireland.

The Duke of the Abruzzi resigns command of the Italian fleet, and is succeeded by Vice Admiral Thaon di Revel.

8.—Brazil, Peru, Chile, Uruguay, Bolivia, Panama, Cuba, and Argentine refuse to recognize the German blockade. Sweden announces her intention to continue a policy of strict neutrality.

The British take a dominating height near Sailly-Saillisel, and advance on both banks of the Ancre.

9.—The Chinese government indorses America's action against Germany on the submarine campaign.

A French aeroplane drops bombs on the railway stations and barracks at Karlsruhe. Hauts Fourneaux, Rombach, Hagondange, Metzières and Tergenier are also bombarded. British airplanes raid the Belgian coast.

Four Norwegian vessels are reported sunk by German submarines.

10.—Ambassador Gerard leaves Germany; American interests in Germany are entrusted to the Spanish Embassy.

The German government makes informal advances toward a possible agreement with the United States for the safety of Americans at sea.

12.—The United States notifies the German government that it can enter into no discussion of the latter's submarine policy until it renews its pledge to sink no neutral vessels without warning and provisions for the safety of passengers and crews.

The *de facto* government of Mexico issues a note to neutral nations urging them to unite in an embargo against the shipment of munitions and supplies to the belligerent nations.

A submarine sinks the American sailing schooner *Lyman M. Law, en route* to Italy.

The United States is formally notified of the continued detention of the American *Yarrowdale* prisoners in Germany.

Italian seaplanes raid Pola.

13.—The sinking of the White Star Line steamship *Afric* is reported; 17 men are missing.

14.—German troops between Serre

and the Somme withdraw from some of their advanced positions.

Norway, Denmark, and Sweden refuse to recognize the German submarine blockade.

Count von Bernstorff sails for Copenhagen on the way to Germany.

15.—German forces gain half a mile on a mile and a half front in the Champagne region.

16.—Great Britain proclaims a new danger zone off the German coast, modifying the zone proclaimed on Jan. 25.

The British in Mesopotamia force the Turks back on the Tigris, and take 1,995 prisoners.

17.—British troops on the Ancre capture German positions on a front of one and a half miles, penetrating the German defenses to a depth of 1,000 yards; north of Baillescourt they carry an important enemy position along a front of 1,000 yards.

18.—The Swedish steamer *Skogland* with five Americans aboard is sunk by a submarine; no lives are lost.

19.—The French liner *Guyane* arrives in New York after sinking a submarine by shell fire.

21.—Great Britain issues an Order in Council requiring neutral ships to call at British or Allied ports or be condemned as enemy carriers.

22.—Seven Dutch steamers are torpedoed by a German submarine and three sunk, while sailing supposedly under a safe conduct from Germany.

23.—The French steamer *Athos*, carrying Senegalese troops and colonial laborers, is torpedoed in the Mediterranean. R. A. Haden, an American Presbyterian missionary, loses his life.

24.—British forces enter Petit Miraumont and push forward on a mile and a half front north of the Ancre.

Germany defends the sinking of the Dutch steamers on Feb. 22, declaring that they took the trip at their own risk.

25.—The Germans are reported to be steadily withdrawing on the Ancre front, the retirement approaching a depth of three miles at some points. British forces advance along a front of eleven miles, occupying Pys, Miraumont, Warlencourt-Eaucourt, and Butte de Warlencourt.

The Allies declare that the blockade of Greece will be lifted when King Constantine gives complete compliance with the Allied demands.

The Cunard liner *Laconia* is sunk without warning by a German submarine; 2 American women lose their lives.

26.—It is announced that Kut-el-Amara has been taken by the British and that the Turks on the Tigris River front are in full retreat toward Baghela.

27.—Germany refuses to guarantee the safety of the U. S. naval vessels *Des Moines* and *Caesar*, now at Alexandria, Egypt, if sent to Asia Minor with supplies for the destitute Syrians and Armenians.

The British take Ligny, a mile and a half southwest of Bapaume, and Le Barque.

28.—It is learned that the U. S. Government is in possession of a copy of a communication addressed by the German Foreign Minister to the German minister at Mexico City, instructing him to propose an alliance between Germany and Mexico, and to suggest that, as soon as war with the United States is certain, the president of Mexico communicate with Japan, suggesting immediate adherence to this plan, and offering to mediate between Japan and Germany.

British troops occupy Gommecourt, Thilloy, and Puisieux-au-Mont in their advance toward Bapaume.

The French destroyer *Cassini* is torpedoed by a submarine; 107 lives lost.

MARCH

1.—The results of submarine warfare for February are as follows: Entente vessels sunk, 134, tonnage, 368,274; neutral vessels sunk 54, tonnage, 97,496.

The Entente Allies urge China to enter the war, offering her remission of the Boxer indemnity and a revision of the tariff as inducements.

Berlin announces the sinking of three transports on Feb. 17, 23, and 24.

2.—The Germans halt their retirement in the Arras-Somme sectors and make a definite stand on a line running from Essarts to a point 1,000 yards southeast of Bapaume.

Russians recapture Hamadan in Persia.

German troops carry out an extensive raid on Russian trenches west of Lutsk.

3.—British forces advance an average of a quarter of a mile on a five-mile front northwest of Bapaume.

The Provisional Minister of Foreign Relations for Mexico formally denies that the Mexican government had been approached by Germany with the object of forming an alliance hostile to the United States.

4.—German forces launch a violent attack at Verdun, gaining a foothold in advanced positions north of Caurières Wood.

5.—The French recapture the trenches lost to the Germans in the Caurières Wood region.

6.—Great aerial activity is in progress on the western front. Eleven British airplanes are lost.

8.—French troops in the Champagne capture a salient between Butte du Mesnil and Maison de Campagne, taken by the enemy on Feb. 15.

The fifty-nine *Yarrowdale* prisoners are finally released and leave for the Swiss frontier.

A special commission on the Dardanelles campaign issues a report fixing the blame for its failure on Winston Churchill, Lord Kitchener, members of the War Council, and others.

Count Ferdinand von Zeppelin dies.

10.—British forces advance on a front of more than three miles in the Ancre region, capturing the village of Irles, northeast of Grandcourt.

The Belgian relief ship *Storstad* is sunk by a German submarine.

The Russians occupy Senne in Western Persia.

11.—British forces under Gen. Maude occupy Bagdad after a three days' battle.

12.—French forces on the Champagne front recapture positions on Hill 185 lost in February and penetrate a fortified work north of Memelon.

The United States Department of State formally announces that the Government has determined to place upon all American merchant vessels sailing through the German War Zone an armed guard for the protection of vessels and lives.

The American steamship *Algonquin,* bound from New York to London, is sunk by a German submarine.

Germany renews her efforts to have the United States reaffirm the treaty of 1798 through the Swiss Minister.

13.—The Germans abandon their main defensive system west of Bapaume on a front of three and a half miles.

The British occupy Grévillers and Loupart Wood.

14.—China severs diplomatic relations with Germany.

Russian forces occupy Kermanshah.

15.—British forces occupy enemy trenches on a front of two and a half miles between Péronne and Bapaume.

It is reported that compulsory deportations from Belgium have been discontinued.

16.—British forces occupy St. Pierre Vaast Wood. The French report gains on both sides of the Avre.

Zeppelins raid London for the first time since 1916.

The U. S. Government notifies President Carranza that it cannot participate in his proposed embargo against the European belligerents.

17.—Allied troops on the western front advance over a total front of 45 miles. British forces take Bapaume, and the French occupy Roye and Lassigny.

A British destroyer and a merchant vessel are sunk and a destroyer damaged in a German naval raid at Ramsgate.

18.—The German retirement in France spreads over a front of nearly 85 miles from south of Arras to Soissons. The important towns of Péronne, Chaulnes, Nesle and Noyon are evacuated.

Announcement is made of the sinking of three American steamships—*City of Memphis, Illinois,* and *Vigilancia,* the last without warning.

Russian forces take Van in Turkish Armenia.

19.—The French battleship *Danton* is torpedoed in the Mediterranean; 296 sailors are drowned. The British steamship *Alnwick Castle* is torpedoed without warning, 320 miles from land.

20.—French troops in Macedonia are reported to have taken two towns north of Monastir, with 1,200 prisoners, between March 13 and 18.

21.—The American steamer *Healdton,* bound from Philadelphia to Rotterdam, is sunk without warning; 21 men are lost.

22.—The German raider *Moeue* returns to a home port after a second cruise in the Atlantic in which 27 vessels are reported to have been sunk.

23.—French troops attacking between St. Quentin and La Fère force the Germans back a distance of from 1¼ to 2½ miles toward St. Quentin.

Great Britain announces an extension of the boundaries of the North Sea danger area; Germany declares a danger zone in the Arctic Ocean.

24.—French forces take the two forts defending La Fère on the west, and drive the Germans back more than a half-mile on the front from Grand Seraucourt to Gibercourt; the British occupy Roisel.

The United States formally refuses Germany's request to modernize and extend the Prussian-American treaties of 1799 and 1828.

The U. S. State Department announces the recall from Belgium of American diplomatic and consular officials and of relief workers.

Gen. M. V. Alexieff assumes chief command of the Russian armies.

25.—The Germans make a stand on the high ground between Castres on the Somme to Hill 121, but are repulsed by the French, who press on to within three miles of St. Quentin.

It is learned that 57 Americans from the British steamer *Esmeralda,* recently torpedoed, have been taken to Germany aboard the *Moeue.*

German torpedo boats bombard Dunkirk.

26.—The British capture Lagnicourt 12 miles west of Cambrai; French forces take Folembray and La Feuillée.

The *St. Louis,* the first armed American ship to cross the Atlantic in defiance of the German submarine blockade, arrives in a British port.

27.—The French capture all the lower Forest of Coucy; British forces occupy the villages of Longavesnes, Lieramont, and Equancourt.

The French Chamber of Deputies votes to call to the colors the class of 1918.

29.—The British take Neuville Bourjonval, 8½ miles southeast of Bapaume.

In a speech before the Reichstag, Chancellor von Bethmann-Hollweg declares that Germany never had the slightest intention of attacking the United States and has no such intention now.

An important British victory in Palestine, near Gaza, is announced; 900 prisoners are claimed.

Two Americans are lost in the sinking of the British steamer *Crispin.*

30.—British forces occupy Ruyaulcourt, Fins, and Sorel in the advance on Cambrai.

Two hundred men of crews of vessels sunk by a German raider off Trinidad are brought into Rio Janeiro by the French bark *Cambronne.*

31.—British troops capture Vermand and threaten St. Quentin on three sides.

It is announced that British forces have occupied Kalaat, Felujah, and Sheraban north of Bagdad.

APRIL

1.—The British west of St. Quentin capture Savy and Savy Wood, and north of Roisel, Epéhy and Peizière.

The armed American steamer *Aztec* is sunk without warning by a German submarine off Brest, with a loss of 11 lives.

2.—The British advance on a ten-mile front north and east of Bapaume, capturing Croisilles and six other villages.

3.—The French storm German positions on an eight-mile front south and southwest of St. Quentin, capturing Dallon, Griffecourt and Cerizy.

The Germans capture the Toboly bridgehead on the Stokhod, in Volhynia, and repulse the Russians across the river, taking 9,600 prisoners and much war material.

5.—British forces north of St. Quentin capture Roussoy.

The American steamer *Missourian* is sunk without warning by a submarine in the Mediterranean.

The Russian War Office reports the occupation of the Mesopotamian frontier towns of Khanikin and Kasrichirin.

6.—The U. S. Government issues a declaration of a state of war with Germany.

The British air forces, in two days of intense activity, take 1,700 photographs behind the German lines, destroying or damaging 44 enemy airplanes and ten balloons, with a loss of 28 airplanes.

7.—Cuba and Panama declare war against Germany in alliance with the United States.

The German gunboat *Cormoran* interned at Guam is blown up by her crew.

The American steamer *Seward* is sunk without warning by a submarine in the Mediterranean. A German destroyer is sunk and another torpedoed off Zeebrugge.

8.—Austria-Hungary severs diplomatic relations with the United States.

9.—The British attack on a 12-mile front east of Arras, from Givenchy to Henin, penetrate the German lines to a depth of two to three miles, and capture Vimy Ridge, Feuchy, Athies, Thelus, and other fortified positions.

10.—The French liner *Sontay* is sunk by a submarine in the Mediterranean, with a loss of 45 lives. The British hospital ship *Salta* is sunk by a mine in the English Channel, with a loss of 54 lives.

11.—The British, east of Arras, capture Monchy and four neighboring villages.

12.—Bolivia severs diplomatic relations with Germany.

The British advance on a nine-mile front between Hargicourt and Metz-en-Couture, south of Cambrai.

13.—The British advance on a 12-mile front between the Scarpe and Loos, capturing Vimy, Vimy Station, Petit-Vimy, Givenchy, Angres, Willervall, Bailleul, La Chaudière, and other positions about Lens; northwest of St. Quentin they capture Fayet.

14.—The British continue to advance on the whole front between the Scarpe and Loos.

Allied airplanes bombard Freiburg, Germany.

15.—The British transports *Cameronian* and *Arcadian* are sunk by submarines in the Mediterranean, with losses of 140 and 279 lives.

16.—The French storm the German first line on a front of 25 miles along the Aisne between Soissons and Rheims; they capture over 10,000 prisoners and much war material.

17.—The British in Palestine capture Turkish positions on a 6½-mile front near Gaza.

The British hospital ships *Donegal* and *Lanfranc* are sunk without warning by German submarines in the English Channel, with a loss of 75 lives, including 15 German wounded.

18.—The French report the capture of over 17,000 prisoners in three days' fighting between Soissons and Rheims. The villages of Chavonne, Chivy, Ostel and Braye-en-Laonnois are taken.

The British in Mesopotamia rout a Turkish army at Istabulat Station on the Tigris southeast of Samara, taking over 1,200 prisoners.

19.—The American steamer *Mongolia* severely damages a German submarine by gunfire off the south coast of England, the first shot of the war.

20.—Turkey severs diplomatic relations with the United States.

21.—Two German destroyers are sunk in an attempted raid on Dover; a German naval squadron bombards Calais, and an airplane squadron, Dunkirk.

23.—The British attack on an eight-mile front between Vimy and Croisilles and advance at all points, capturing Gavrelle and Guémappe and taking over 1,500 prisoners; west of Cambrai they capture Trescault and penetrate Haveincourt Wood; British airplanes bring down 39 German machines with a loss of two.

The British on the Tigris capture Samara Station, the terminus of the Bagdad section of the Bagdad Railway.

24.—The British in Macedonia attack between Lake Doiran and the Vardar and penetrate the Bulgarian first line on a mile front.

26.—A German naval squadron bombards Ramsgate, killing two civilians.

27.—Guatemala severs diplomatic relations with Germany.

28.—The American tank steamer *Vacuum* is sunk, unwarned, by a submarine westbound off Barra, with a loss of 23 lives.

29.—The British north of the Scarpe capture German positions on a mile front south of Oppy.

The French Government appoints Gen. Phillipe Pétain to the supreme command of the French armies as Chief of Staff.

30.—The Turkish War Office reports the occupation of Mush, Armenia, evacuated by the Russians.

The French transport *Colbert* is sunk in the Mediterranean with a loss of 51 lives.

MAY

1.—The American armed steamer *Rockingham* is sunk by a German submarine.

3.—The British attack on a 12-mile front east of Arras; capture Fresnoy and the adjacent positions on a two-mile front, penetrate the Hindenburg line west of Queant, and advance at other points.

4.—A squadron of American destroyers begins active operations in European waters.

The British transport *Transylvania* is sunk by a submarine in the Mediterranean with a loss of 413 lives.

The French capture Craonne and advance on a 2½-mile front northwest of Rheims.

5.—The French storm a German salient on a four-mile front southeast of Vauxaillon and occupy the Craonne plateau between Cerny and Craonne, taking 4,300 prisoners.

8.—The Germans recover the village and wood of Fresnoy, southwest of Lens; the French capture German positions on a mile front northeast of Craonne.

The British in Macedonia advance on a two-mile front southwest of Lake Doiran.

9.—Liberia severs diplomatic relations with Germany.

10.—The Russians in Mesopotamia cross the Diala between Jumur and Omaraga.

12.—The British penetrate Bullecourt and advance on a 1½-mile front west of Roeux, taking over 700 prisoners.

A British naval squadron bombards Zeebrugge.

14.—The Italians begin an offensive from Tolmino to the sea and advance at Monte Cucco, east of Gorizia, and on the Carso.

British forces capture Roeux.

British airplanes destroy a German Zeppelin over the North Sea.

15.—The Italians force a passage of the Isonzo near Loga and capture Bombrez; northeast of Plava they storm Zagora, Zagomila, and the crests of Monte Cucco and Monte Vodice.

General Petain is appointed Commander-in-Chief of the French armies on the western front, succeeding General Nivelle; General Foch is appointed Chief of Staff, succeeding General Petain.

Austrian destroyers sink 14 British drifters in the Adriatic.

16.—The British complete the capture of Bullecourt.

17.—Honduras severs diplomatic relations with Germany.

18.—The Italians capture an important crest on Monte Vodice.

A hospital unit of the U. S. Medical Corps arrives in England.

19.—Nicaragua severs diplomatic relations with Germany.

20.—The British capture a mile of the Hindenburg line between Fontaine-les-Croisilles and Bullecourt; the French capture important heights south of Moronvilliers, taking 1,000 prisoners.

22.—The French storm the last three points dominating the valley of the Ailette and three lines of trenches east of Chevreux.

23.—The Italians on the Carso break through the Austrian lines on a six-mile front from Castagnavizza to the sea.

24.—The first American combatant troops, a unit of the motor-transport service, go into training at the front in France.

The Italians capture fortified heights north of Jamiano and advance between Jamiano and the sea, taking in two days over 10,000 prisoners.

25.—German airplanes raid the southeast coast of England, killing 76 and injuring 174 in Folkestone and other towns.

26.—The Italians continue their advance on the Carso, penetrating Castagnavizza, and storm important heights in the Palliova Valley.

The British hospital ship *Dover Castle* is sunk without warning by a submarine in the Mediterranean, with a loss of six lives.

29.—The British Admiralty announces the sinking of the armed merchant cruiser *Hilary* by a submarine in the North Sea, and of a destroyer by collision.

The Italians occupy four villages in Albania east of Gerat.

30.—The armed American steamer *Silver Shell* sinks a hostile submarine in the Mediterranean.

31.—The American sailing vessel *Dirigo* is sunk unwarned by a German submarine off Plymouth.

JUNE

4.—The Austrians recover positions lost to the Italians south of Jamiano, taking nearly 7,000 prisoners.

Gen. Michael V. Alexieff resigns as commander-in-chief of the Russian armies and is succeeded by General Brusiloff.

5.—A British naval squadron bombards Ostend; another squadron engages six German destroyers in the North Sea and sinks one.

German airplanes raid Essex and Kent, killing 12 and wounding 36; eight of the invaders are driven down.

6.—American warships arrive off the coast of France and the naval collier *Jupiter* loaded with wheat arrives at a French port.

The Argentine sailing ship *Oriama* is sunk by a submarine in the Mediterranean.

7.—The British, attacking on a front of nine miles, capture the whole Messines-Wytschaete ridge, the villages of Messines, Wytschaete and Oostaverne. and the German positions east of the latter on a front of five miles, and take over 6,400 prisoners and 30 guns.

8.—General Pershing and his staff of 198 arrive in England on their way to France; the first American regular force of 100 naval aviators arrive in France.

10.—The Italians southeast of Trent capture Agnello Pass.

12.—The armed American tanker *Moreni* is sunk in a two-hour battle with a German submarine.

13.—German airplanes bombard the East End of London, killing 157 and injuring 403.

The Germans south of Ypres abandon their first-line positions on a two-mile front between St. Yves and the River Lys.

French troops occupy Larissa, Thessaly.

General Pershing and his staff arrive in France.

14.—The German steamer *Thuringen*, plying between Hamburg and Rotterdam, is torpedoed.

16.—The American tanker *John D. Archbold* is sunk by a German submarine off the French coast.

17.—German Zeppelins raid the coast

of Kent, killing two and injuring 16; one Zeppelin is destroyed.

18.—Haiti severs diplomatic relations with Germany.

19.—The Italians in the Trentino capture important positions on Monte Ortigara, taking nearly 1,000 prisoners.

22.—The Turks recapture the town of Sheraban, 55 miles northeast of Bagdad.

25.—The French storm important German positions near Hurtebise, on the Chemin des Dames, taking nearly 400 prisoners.

The Austrians recover their lost positions on Monte Ortigara, taking 1,800 Italians prisoner.

French troops enter Athens, following pro-German demonstrations.

26.—The British occupy positions evacuated by the Germans on a two-mile front astride the Souchez River, and capture La Coulatte, one mile south of Lens.

The first contingent of American troops under Gen. Wm. L. Sibert lands in France.

27.—The French cruiser *Kléber* is sunk by a mine off the French coast. The British transport *Armadale* is sunk by a submarine in the Atlantic with a loss of 11 lives.

28.—The British advance on a front of two miles south of Lens and penetrate Avion.

The Germans capture French positions on a mile front at Hill 304, north of Verdun, and on a half-mile front east of Cerny.

29.—The French north of Verdun recover part of their lost positions west of Hill 304; the Germans gain in a heavy attack near Dead Man's Hill.

The Greek Government severs diplomatic relations with the Central Powers.

30.—The Italians in the Trentino evacuate Agnello Pass.

JULY

1.—The Russians take the offensive on an 18-mile front in Galicia, between the Stripa, west of Tarnopol, and the Narayuvka, south of Brzezany, taking over 10,000 prisoners.

Great Britain again modifies the danger zone in the North Sea.

2.—The Russians east of Zloczow repulse the Austro-Germans across the Little Stripa, taking 6,300 prisoners and many guns.

The last supply ships of the first American expeditionary force reach a French port.

3.—The Germans are completely repulsed in a heavy attack on an 11-mile front along the Chemin des Dames.

Secretary Daniels announces the safe arrival of the American expeditionary force in France and the defeat of two attacks on the transports by German submarines, at least one of which was sunk.

4.—German airplanes raid Harwich, England, killing 11 and wounding 36, with a loss of two machines.

6.—German airplanes bombard Nancy; in reprisal 84 French airplanes raid Trèves, Essen, Coblenz, Ludwigshafen, and other German cities.

7.—The French north of Verdun capture three important salients west of Dead Man's Hill and Hill 304.

A German destroyer is sunk by a mine in the North Sea.

Twenty-two German airplanes bombard London and the Isle of Thanet, killing 59; three machines are brought down.

The American steamer *Massapequa* is sunk by a submarine.

8.—The Russians advance to a depth of five miles on a 20-mile front west of Stanislau, capture Jezupol and four other villages, and take 7,000 prisoners and 48 guns.

9.—The British battleship *Vanguard* is destroyed by an internal explosion, with a loss of nearly 800 lives.

10.—The Russians capture Halicz.

The Germans capture the British positions east of the River Yser on a mile front north of Nieuport, taking 1,250 prisoners.

British airplanes bombard the Turkish War Office in Constantinople and the Turkish fleet in the Golden Horn.

11.—The Russians capture Kalusz.

12.—British aviators bring down 31 German airplanes with a loss of nine machines.

14.—The Russians repulse the Austrians at Lodziany, southwest of Kalusk, taking 1,000 prisoners.

16.—British warships capture four German merchant ships in the North Sea and drive two others ashore on the Dutch Coast.

The Russians evacuate Kalusz and retire across the Lomnica.

17.—The French north of Verdun capture two trench lines on a 1¼-mile front west of Hill 304.

19.—The Austro-Germans in Galicia assume the offensive between Zlochoff and Brzezany and penetrate three lines between the Zlota Lipa and the Sereth, abandoned by mutinous Russian troops.

20.—The Austro-Germans in Galicia advance on a 26-mile front on either side of Jezierna and recover lost positions north of Brzezany; south of the Dniester they capture Babin, driving the Russians across the Lomnica, and storm important heights northeast of Novica.

22.—German airplanes bombard Felixstone and Harwich, England, killing 11 and injuring 26, but are driven off from London.

The Germans in powerful attacks east of Craonne capture small first-line trench sections on the Casemates and Californie plateaux.

Siam declares war on Germany and Austria and seizes 11 steamers in Siamese ports.

23.—The retreat of the Russians in Galicia extends over a front of 155 miles, from the Sereth to the Carpathians.

24.—The French recover all their lost positions on the Casemates and Californie plateaux east of Craonne.

Austro-Germans occupy Tarnopol, Stanislau and Nadworna.

The Rumanians in the Luchitza Valley advance over a front of 18 miles and penetrate to a depth of nine, taking 10 villages.

26.—Russians abandon the Carpathian front as far as the Kirlibaba Pass.

Representatives of the British, French and Italian Governments, after a two-days conference in Paris on the Balkan situation, announce the withdrawal of Allied troops from Thessaly, Epirus and old Greece, and reaffirm that it is their absolute decision to continue the war to victory.

27.—The Rumanians capture important heights southwest of Beresczi; the Russians capture a village near Mount Kalakul.

German airplanes bombard Paris without casualties.

The American schooner *John Twohy* is sunk by a German submarine off the Azores.

29.—The Russians stiffen their defensive and repulse the Austro-Germans at several points on the Zbrocz and Cheremosh Rivers.

30.—The French on the Aisne advance on a mile front south of La Royère.

The British Admiralty announces the sinking by a submarine of the old cruiser *Ariadne* with a loss of 38.

31.—The British and French in Flanders attack on a 20-mile front between Dixmude and Warneton and advance over the whole front to a maximum depth of 2½ miles, taking 6,000 prisoners; the British capture Verlorenhoek, Frezenberg, St. Julien, Pilkem, Hooge, Westhoek, Hollebeke, and La Basse Ville, and cross the River Steenbeek; the French cross the Yser Canal at many points and capture Steenstraete and Bixschoote.

The Russians in Galicia gain slightly in an attack east of Trembowla, but are forced with heavy loss across the Zborcz near Zalucz and retire further in Bukowina.

The American tanker *Motano* is sunk by a German submarine off the Irish coast with a loss of 24 men, including eight naval gunners. The British steamer *Belgian Prince* is sunk by a German submarine in British waters.

AUGUST

1.—Pope Benedict XV addresses to the belligerents an appeal for peace based on the reciprocal restitution of occupied territory, the submission of other territorial questions to a conference, the abandonment of claims for damages and indemnity, disarmament, and the freedom of the seas.

The Germans in Flanders recapture St. Julien from the British and penetrate Westhoek.

2.—The Russian Government, in a message to its representatives in the Allied capitals, renews its pledge of irrevocable will to continue the war to final victory; Gen. Alexis A. Brusiloff, commander-in-chief, and Gen. Radko Dimitrieff, commander on the Riga front, resign, and are succeeded by Gen. L. G. Korniloff and General Parsky, while General Tcheremissof succeeds General Korniloff as commander on the southwestern front.

The American schooner *John Hays Hammond* is reported sunk by a German submarine.

3.—The Austro-Germans capture Czernowitz, which changes hands for the tenth time in the war.

The British reoccupy St. Julien.

4.—The British advance on a 1,000-yard front in the Cité du Moulin, southwest of Lens.

6.—The Austro-Germans in Rumania, under von Mackensen, advance north of Fokshani and repulse the Russians across the Tyrladesus, taking 1,300 prisoners.

The American tank steamer *Campana* is sunk by a German submarine off Ile de Re; the captain and gun crew of five are taken prisoner.

7.—The Russians in Galicia recapture the villages of Barychkovcy and Wygoda, near the confluence of the Zbrocz.

Liberia declares war on Germany.

Representatives of all the Entente Allies meet in conference in Washington.

8.—Von Mackensen's forces north of Fokshani reach the Susitza River, taking over 3,000 prisoners in 3 days; Russo-Rumanian troops retire in the Trotus Valley, southwest of Ocna.

10.—The British advance on a two-mile front south of the Ypres-Roulers railway, completing the capture of Westhoek village and ridge and penetrating Glencorse Wood.

11.—Russo-Rumanian forces, counter-attacking in the Fokshani district, take 1,200 prisoners.

French airplanes bombard Frankfort-on-the-Main.

12.—German airplanes bombard Southend and other English coast resorts, killing 32 and wounding 42, with a loss of two machines.

14.—China declares war on Germany and Austria-Hungary.

The Austro-Germans in Rumania capture the bridgehead of Baltaretu, on the Sereth, and Stracani, northwest of Patzin, taking 3,000 prisoners.

Austrian airplanes bombard Venice, with a loss of at least three machines.

15.—The British, advancing on a two-mile front south of Loos, capture Hill 70, the key to Lens, Rasé Wood, and the villages of Cité Ste. Elizabeth, Cité Ste. Emilie, and Cité St. Laurent.

The Germans burn St. Quentin Cathedral.

The Russian destroyer *Lieutenant Bourakoff* is sunk by a mine off the Aland Islands.

16.—The British and French advance on a nine-mile front north of the Ypres-Menin road, taking over 2,000 prisoners and 24 guns; the British capture Langemarck.

A British naval squadron engages and damages a German destroyer and several minesweepers in the North Sea.

The Austro-Germans in Rumania advance south of Grozesci, taking 1,600 prisoners.

17.—French airplanes to the number of 111 raid German bases as far east as Freiburg.

The British liner *City of Athens*, out of New York for India, is sunk by a mine off Cape Town with a loss of 19 lives.

19.—The Italians assume the offensive on a 37-mile front between Tolmino and the sea; they cross the Isonzo north of Anhovo, and capture the first line of

Austrian positions from Plava to the sea, taking over 7,500 prisoners.

German airplanes bombard a hospital manned by Americans at Vadelaincourt, near Verdun, kiling 30 nurses and wounded men.

20.—The French north of Verdun, attacking on an 11-mile front from Avocourt to Bezonvaux, capture Avocourt, Corbeaux and Cumières Woods, Dead Man Hill, the Talou Ridge, and Hills 304, 344 and 240, and the village of Champneuville, taking over 5,000 prisoners.

21.—The French north of Verdun capture the Côte de l'Oie Regnéville and Samogneux.

The Germans west of Riga advance between the Tirul marshes and the River Aa.

British naval forces destroy a German Zeppelin off the Danish coast.

22.—The British storm important positions on a mile front astride the Ypres-Menin road and advance on a 2½-mile front further north.

The Italians capture Selo. They increase their number of prisoners to 16,350.

German airplanes raid Dover, Ramsgate and Margate, killing 11 and injuring 13, with a loss of eight machines.

British airplanes and warships bombard Zeebrugge.

24.—The French north of Verdun capture Hill 304, Camard Wood, and three fortified works about Bethincourt.

The Italians capture Monte Santo, northeast of Gorizia.

The German steamer *Renate Leonhardt* is sunk by a submarine off the Netherlands coast.

26.—The French north of Verdun, advancing on a 2½-mile front, capture the Fosses and Beaumont woods and penetrate Beaumont; the British advance on a mile front east of Hargicourt, north of St. Quentin.

29.—The Austro-Germans in Rumania occupy Trechti and neighboring heights, abandoned by mutinous Russian troops.

SEPTEMBER

1.—The Italian War Office reports that fourteen strongly fortified mountains on the Isonzo front have been captured and an eleven-mile breach made in the Austrian lines; a total of 27,302 prisoners is claimed.

Four German mine sweepers are sunk by British destroyers off the coast of Jutland.

3.—The Germans occupy Riga, evacuated by the Russians, and penetrate the Russian positions on a nine-mile front about Valenrode.

German airplanes raid the Thames estuary, killing 108 and injuring 92 in the naval station at Chatham. Italian airplanes in force bombard Pola.

4.—German airplanes raid London, killing 11 and injuring 62; a German submarine bombards Scarborough, killing three and injuring five.

Four Americans are killed and 32 wounded in an attack on American hospitals in France.

5.—The Russians retreating on a 40-mile front east of Riga cross the Melupe and evacuate their positions on the Dvina as far as Friedrichstadt.

German airplanes again bombard the hospital at Vandelaincourt, near Verdun, killing 19 persons and wounding 26.

7.—The Atlantic Transport liner *Minnehaha* is sunk by a submarine off the coast of Ireland with a loss of 48 lives.

8.—The French north of Verdun advance on a 1½-mile front between Fosses and Caurières Woods, taking the whole of Chaume Wood.

The State Department at Washington publishes the text of three messages of Count Luxburg, German chargé d'affaires at Buenos Aires, to the German Foreign Office, sent by the Swedish Legation to Argentine as their official messages, addressed to the Swedish Foreign Office.

10.—The French in Macedonia capture Pogradeto, southwest of Lake Ochrida.

The Swedish Government inquires of the German Government as to the truth of the allegations of improper conduct of its representative in Argentine.

11.—Admiral Lindman, Swedish Minister of Foreign Affairs, declares that Baron Lowen, Swedish Minister to Argentine, acted in good faith in transmitting the German messages and will not be recalled.

12.—The Argentine Government dismisses the German Minister, Count Karl von Luxburg, and demands of the German Government an explanation of his conduct; mobs in Buenos Aires attack the German Legation and destroy much German property.

The American steamer *Wilmore* is sunk by a German submarine off the French coast.

13.—The U. S. State Department publishes a letter from the German Minister to Mexico to the German Chancellor, dated March 8, 1916, recommending the Swedish chargé d'affaires at Mexico City for decoration in return for his services in transmitting German diplomatic correspondence.

The Russians east of Riga capture Kronberg, Pelne, Keitzen and Sisseral.

14.—After nearly two weeks' fighting, Italian forces take the northwestern crest and the peak of Monte San Gabriel.

15.—The American tank steamer *Platuria* is sunk by a submarine in the Mediterranean Sea with a loss of nine lives.

16.—French airplanes raid Stuttgart, Saarbrücken, and other cities in Württemberg and Rhenish Prussia. Austrian airplanes raid Venice in force without casualties.

18.—The German Government expresses to the Swedish Government regret for the embarrassment caused by the acts of Count von Luxburg but withholds any explanation.

20.—The British, attacking on an eight-mile front east of Ypres, capture Veldhoek and Zevencote and take 3,000 prisoners and several guns.

The German and Austrian Governments, replying to Pope Benedict's peace note, approve its terms generally as a basis for negotiation.

21.—The Germans on the Dvina capture Jacobstadt and repulse the Russians across the river on a front of 25 miles.

The commander and part of the crew of the German commerce raider *Seeadler* are captured off the Fiji Islands.

Costa Rica severs diplomatic relations with Germany.

General Tcheremisoff is appointed Chief of the Russian General Staff, succeeding General Alexieff, resigned.

22.—The Argentine Government sends an ultimatum to Germany, demanding a formal statement of its attitude towards the activities of Count von Luxburg and a ratification of promises of immunity for Argentine shipping.

British warships bombard Ostend.

23.—The French transport *Medie* is sunk in the Mediterranean, with a loss of 250 lives.

A German note is received at Argentine disapproving Count von Luxburg's statements.

24.—German airplanes raid London, killing 15 and injuring 70.

25.—German airships raid the coast of Yorkshire, injuring three persons; German airplanes raid London, killing seven and injuring 26; two of the raiders are brought down at sea off the coast of Holland.

26.—The British advance on a six-mile front east of Ypres, capturing Zonnebeke, Polygon Wood, and the Tower Hamlets ridge, and taking 1,600 prisoners.

29.—The Italians capture heights on the southeastern edge of Bainsizza Plateau south of Podlaca and Madoni, taking 1,400 prisoners.

The British in Mesopotamia occupy Ramadie, taking prisoner the entire Turkish army under Ahmed Bey.

German airplanes raid London, killing 11 and injuring 82.

30.—German airplanes raid London, killing nine and injuring 42. French airplanes raid Stuttgart.

OCTOBER

1.—German airplanes in four squadrons raid London and English coast towns, killing 10 and injuring 38; French airplanes raid Stuttgart, Frankfort, Treves and Coblenz.

2.—French airplanes raid Baden.

4.—The British east of Ypres advance on an eight-mile front between Langemarck and Gheluvelt to a maximum depth of 1½ miles, taking 4,500 prisoners.

Announcement is made of the torpedoing of the British armored cruiser *Drake* off the north coast of Ireland.

An American patrol vessel in European waters is sunk.

6.—Peru severs diplomatic relations with Germany.

7.—Uruguay severs diplomatic relations with Germany.

An interned German submarine escapes from Cadiz.

8.—The Navy Department announces a mistaken attack by an American war vessel on an Italian submarine, killing two men.

9.—The British and French north and east of Ypres advance on a ten-mile front between Draeibank and Reutel, to a maximum depth of two miles, capturing Poelcapelle, St. Jean de Mangelaere and Veldhoek, and taking 2,000 prisoners.

The Belgians in German East Africa capture Mahenge.

11.—The Italian War Office announces the capture of an Austrian destroyer in the Adriatic.

12.—The British east of Ypres advance on a six-mile front between Houthuist Wood and the Ypres-Roulers railway to an average depth of a half mile.

The Germans effect landings on the islands of Oesel and Dagö, in the Gulf of Riga.

13.—The Germans on Oesel Island capture Arensburg.

The German Government apologizes to Sweden for the nature of the messages sent by Count von Luxburg through the Swedish Legation at Buenos Aires.

14.—A Russian torpedo fleet routs a German squadron from Soela Sound, north of Oesel Island, sinking two torpedo boats and losing one.

15.—The British auxiliary cruiser *Champagne* and the mine sweeper *Begonia* are reported sunk.

16.—The U. S. destroyer *Cassin* is attacked by a German submarine and slightly damaged by a torpedo which kills one man and injures five.

The Germans complete the conquest of Oesel Island, taking 1,100 prisoners.

17.—A German fleet penetrates the Gulf of Riga through Irbe Channel, defeats the Russian fleet with the loss of the battleship *Slava*, and drives it into Moon Sound, the exits of which are closed by other squadrons, and silences the batteries on Moon Island.

The American transport *Antilles*, westbound from France under convoy, is sunk by a German submarine with a loss of 67 lives, including six naval and 16 army enlisted men.

The British destroyers *Mary Rose* and *Strongbow* and their convoy of nine Scandinavian merchant vessels are sunk by two German raiders off the Shetlands.

18.—The Germans capture Moon Island by a combined land and sea attack, taking 5,000 prisoners; two German torpedo boats are sunk by mines in Moon Sound; the Russians begin the evacuation of Reval.

19.—The British in Mesopotamia begin an enveloping movement near the Persian frontier and force the Turks across the Diala at Kizil-Robat.

German Zeppelins raid London and the eastern counties of England, killing 34 and injuring 56.

The British auxiliary cruiser *Oeama* is sunk by a submarine.

20.—The Russian fleet trapped in Moon Sound escapes to the north, with the exception of four small stranded vessels; the Germans occupy Schildau Island.

Four German Zeppelins returning from the raid on England are brought down in France by airplanes and artillery; three others are damaged.

21.—The Germans effect a landing on Werder Peninsula, at the northern end of the Gulf of Riga. They complete the occupation of Dagö Island, taking 1,200 prisoners.

22.—The British and French advance on a wide front astride the Ypres-Staden railway, penetrating Houthulst Wood.

The Germans east of Riga begin a retirement on the Skuli-Lemburg front.

23.—The French northeast of Soissons advance on a six-mile front to a maximum depth of two miles, capturing Allemant, Vaudesson. Chavignon, and Malmaison Fort, taking 8,000 prisoners and 70 guns.

The Russian War Office announces the crippling of 16 German war vessels in the recent fighting in the Gulf of Riga and the actual sinking of six torpedo boats.

24.—The Austro-Germans, attacking on a front of 19 miles, capture the advanced Italian positions near Flitsch and Tolmino, driving the Italians across the Isonzo and taking 10,000 prisoners and many guns.

British airplanes bombard factories at Saarbrucken.

25.—The Italians retreat to the frontier between Monte Maggiore and Auzza and begin to evacuate the Bainsizza Plateau; the Austro-Germans advance beyond Caporetto and Ronzina, storming Monte Matajur, and succeed in increasing their captures to 30,000 prisoners and 300 guns.

The French northeast of Soissons capture Pargny-Filain and the village and wood of Pinon, driving the Germans across the Oise-Aisne Canal and increasing their captures to 12,000 prisoners and 120 guns.

26.—The Austro-Germans cross the Italian frontier between Monte Canin and the Judrio Valley and storm Monte Santo, increasing their captures to 60,000 prisoners and 500 guns.

The British and French east of Ypres advance on a 10-mile front between Houthulst Wood and the Ypres-Menin road.

The French northeast of Soissons capture Filain.

The Brazilian Government declares war on Germany.

27.—The Austro-Germans capture Gorizia and Cividale, increasing their captures to 100,000 prisoners and 700 guns.

American army headquarters in France announces that American troops have been for some days in first-line trenches on the French front and have begun artillery action against the Germans.

The American steamship *D. N. Luckenbach* is sunk off the French coast.

28.—The Austro-Germans capture Cormons, west of Gorizia; the Italian retreat extends south to the Adriatic and north to Ploecken Pass.

The French east of Ypres capture Luyghem and, with the Belgians, complete the occupation of the Merckem Peninsula.

The Germans withdraw the troops landed on Werder Peninsula.

The first American is wounded on active service on the French front.

29.—The Austro-Germans capture Udine and cross the Italian frontier in the Carnic Alps.

30.—The British advance on a wide front north of the Ypres-Roulers railway, storming Meetchele and reaching Passchendaele.

31.—The Austro-Germans reach the Tagliamento and capture the bridgehead positions at Dignano, Cadroipo, Pinzano and Latisana held by the Italian rear guard, taking 60,000 prisoners and several hundred guns; British and French troops join the Italians.

The British in Palestine capture Beersheba, taking 1,800 prisoners and nine guns.

NOVEMBER

1.—The Germans evacuate their last positions on the Chemin des Dames.

The Navy Department announces the damaging of the American transport *Finland* by a torpedo; with a loss of nine lives.

Sir Eric Geddes, speaking in the British House of Commons, announces that nearly half the German submarines in service have been sunk.

2.—The American steamer *Rochester* is sunk by a submarine off the Irish coast, with a loss of fourteen lives.

3.—Following the retirement of the Germans on the Chemin des Dames, French forces occupy the territory between the Oise Canal and Corbeny as far as the south bank of the Oilette River.

The German auxiliary cruiser *Marie* and 10 armed patrol vessels are sunk by British destroyers in the Cattegat.

The Germans raid the trenches held by the Americans on the French front, killing three, wounding five and taking 12 prisoners.

4.—The Austro-Germans cross the Tagliamento north of Pinzano, taking 6,000 prisoners.

5.—The Italians abandon the whole line of the Tagliamento and retreat on a 93-mile front in the Carnic Alps from Fella Valley to the Colbricon.

The American patrol boat *Alcedo* is sunk by a German submarine in the war zone, with a loss of one officer and 20 men.

6.—The British capture Passchendaele, taking 400 prisoners. The British in Palestine capture Gaza. In Mesapotamia they occupy Tekrit, 97 miles northwest of Bagdad.

7.—The Austro-Germans cross the Livenza and outflank the Italian rear guard on the Tagliamento between Tolmezzo and Gemona, taking 17,000 prisoners.

8.—General Diaz is appointed commander-in-chief of the Italian armies, succeeding General Cadorna.

Representatives of Great Britain, France and Italy in conference at Italian headquarters create a permanent inter-Allied military committee composed of Generals Cadorna, Foch and Sir H. H. Wilson.

9.—The Austro-Germans capture Asiago and reach the Piave from Susegana to the sea.

The British in Palestine capture Askalon, taking 700 prisoners and 13 guns.

10.—The British, advancing on a 1½-mile front north of Passchendaele, capture the last dominating point on the ridge.

12.—The Austro-Germans on the Trentino front capture Fonzaso and Monte Longara.

13.—The Austro-Germans cross the lower Piave in small force at San Dona and establish a bridgehead at Zenson; east of Asiago they capture Primolano and Feltre.

14.—The British in Palestine cut the Jaffa-Jerusalem railroad.

15.—The Austro-Germans on the Trentino front capture Cismon; the Italians flood the country at the mouth of the Piave.

16.—Austro-Germans who cross the Piave at two points above Zenson are repulsed; on the Trentino front they storm Monte Prassolan.

17.—The British in Palestine occupy Jaffa without opposition.

A British naval squadron routs a German light-cruiser squadron in Heligoland Bight, sinking a mine sweeper. Five German submarines are sunk by British naval forces.

18.—The Austro-Germans on the Trentino front capture Quero, Monte Cornelle and some positions on Monte Tomba.

Major-Gen. Frederick S. Maude, commanding the British forces in Mesopotamia, dies at the front after a brief illness.

19.—The American destroyer *Chauncey* is sunk in collision in the war zone, with a loss of 21 lives.

21.—The British, attacking on a 32-mile front between St. Quentin and the Scarpe, penetrate two lines of German positions on a 10-mile front west of Cambrai to a maximum depth of five miles, capturing Benavis, La Vacquerie, Ribecourt, Flesquières, Havrincourt, Masnières, Marcoing, Graincourt and Anneux, and taking 8,000 prisoners and many guns.

The Austro-Germans on the Trentino front capture Monte Fontana Secca and Monte Spinoncia.

The British in Palestine capture Nebi-Samwil, the ancient Mizpah.

22.—The German Government announces the establishment of a barred zone around the Azores and off the coast of Greece.

The Russian Bolsheviki Government announces the demobilization of a part of the armies.

23.—Powerful Austro-German attacks on the Italian front from the Asiago Plateau to the Brenta River are reported repulsed after heavy fighting.

24.—The American steamer *Schuylkill* is reported sunk by a submarine in the Mediterranean.

25.—The French north of Verdun penetrate two lines of German positions on a two-mile front east of Samogneux, taking 800 prisoners.

The American steamer *Actaeon,* formerly the German steamer *Adamsturm,* is sunk by a submarine off the coast of Spain.

27.—The British west of Cambrai capture and lose Bourlon and Fontaine Notre Dame.

Russian Bolsheviki envoys cross the German lines and arrange for the opening of negotiations for an armistice.

29.—Chancellor von Hertling, speaking at the opening of the German Reichstag, declares that Germany is ready to open peace negotiations with the Russian Government as soon as representatives with full powers are sent to Berlin, and that Germany will respect the right of self-determination of the peoples of Poland, Courland and Lithuania.

Representatives of 15 Allied nations meet in a war conference in Paris.

Lord Lansdowne publishes a letter in the London *Daily Telegraph* urging upon the Allies a restatement of their war aims.

30.—The Germans south of the Cambrai salient, attacking on a seven-mile front between Vendhuile and Crevecœur, penetrate the British lines to a depth of two miles, capturing Villers-Guislain, Gonnelieu, Gauche Wood, Gouzeaucourt and La Vacquerie and taking 4,000 prisoners; the British later recover Gouzeaucourt, Gauche Wood and La Vacquerie, and repulse another heavy German attack between Mœuvres and Bourlon.

DECEMBER

1.—The British west of Cambrai recapture Gonnelieu but evacuate Masnières.

The British commander in German East Africa reports the colony completely conquered.

The Allies' Supreme War Council, representing the United States, Great Britain, France and Italy, holds its first meeting at Versailles.

3.—The Germans west of Cambrai, attacking heavily between Marcoing and Gonnelieu, capture La Vacquerie.

Russian Bolsheviki emissaries begin negotiations for an armistice with the Germans at Brest-Litovsk.

The British and Russians in Mesopotamia cross the Diala north of Bely Abbas and occupy the Sakal Tutan Pass.

5.—The British west of Cambrai evacuate Bourlon Wood, Graincourt, Anneux, Cantaing, Noyelles and Marcoing.

The Austro-Germans on the Asiago Plateau storm Monti Badenecche, Tondarecar, Demo and Castelgomberto, taking 11,000 prisoners.

The Russian Bolsheviki agree to a suspension of hostilities on all fronts for a period of 10 days from Dec. 7.

6.—Leon Trotzky, Bolshevist Foreign Minister, notifies the representatives of the Allies in Petrograd that armistice negotiations with the Germans have been suspended for one week to enable the Allied Governments to define their attitude.

The American destroyer *Jacob Jones* is sunk by a submarine in European waters with a loss of 65 lives.

German airplanes raid London, killing seven persons and injuring 21; two airplanes are brought down and their crews captured.

The Rumanian Government announces the suspension of hostilities in concert with the Russians.

The Austro-Germans on the Asiago Plateau capture Monte Sisemol, taking 4,000 prisoners.

The British in Palestine capture El Khulib, the ancient Hebron.

8.—The British occupy Jerusalem, surrendered by the Turks after complete isolation.

Ecuador severs diplomatic relations with Germany.,

The Austrian battleship *Wien* is sunk by Italian torpedo boats in Triest harbor.

10.—Panama declares war on Austria-Hungary.

11.—President Wilson signs a proclamation declaring a state of war with Austria-Hungary.

12.—The Germans west of Cambrai are checked in a heavy attack near Bullecourt with a gain of 500 yds. of front-line trenches.

13.—Funchal, Madeira, is bombarded by a German submarine.

14.—Secretary Daniels announces the forming of an Allied Naval Council including representatives of France, England, the United States, Italy, and Japan.

15.—Negotiations which have been proceeding at Brest-Litovsk and in the signing of an armistice, to be in effect from Dec. 16 till Jan. 14, and then to endure if not countermanded.

Austrian forces in northern Italy reach Col Caprille.

17.—The British Admiralty announces the sinking of one British and five neutral merchantmen, a British destroyer, and four armed trawlers in the North Sea by German destroyers.

18.—Austro-German forces storm Monte Asolone, guarding the San Lorenzo Valley, taking 2,000 Italians.

German airplanes raid the English coast, and drop bombs on London; 10 persons are killed.

20.—Italian forces retake a considerable portion of the ground lost to the enemy in the Monte Asolone region on Dec. 18.

22.—It is reported that peace negotiations are begun by the Central Powers and Russia at Brest-Litovsk.

Three British destroyers are sunk by mines or torpedoes off the Dutch coast; 193 men are lost.

23.—Austro-German forces in the Asiago offensive storm the summits of Col del Rosso and Monte Valbella, cutting off more than 6,000 Italians from the main army.

24.—British fliers bombard Mannheim.

25.—Count Czernin, Austro-Hungarian Foreign Minister, presents the Central Empires general peace proposals, which are approved by the Russians; they include no forcible annexations and no indemnities.

26.—Italians bring down nearly half the machines in a big air fleet attacking in Northern Italy.

27.—British troops repulse a Turkish attempt to recapture Jerusalem.

28.—German air raiders bombard Padua; 13 persons are killed.

29.—A second raid on Padua results in three deaths.

30.—The British are repulsed by the Germans on a front of two miles south of Cambrai.

French forces on the Italian front storm enemy positions in the Monte Tomba region, taking as a result 1,400 prisoners.

British troops in Palestine take possession of Bireh.

31.—A third air raid in Padua damages the Cathedral.

AMERICAN NECROLOGY

Acheson, Ernest Francis, Washington, May 16, aged 61; Representative from Pennsylvania, 1895-1909.

Allen, John Mills, Tupelo, Miss., Oct. 30, aged 71; Representative from Mississippi, 1885-1901.

Anderson, Thomas McArthur, Portland, Ore., May 8, aged 81; brigadier-general, U. S. A., retired.

Andrews, Elisha Benjamin, Providence, R. I., Interlaken, Fla., Oct. 30, aged 73; former president of Brown University, chancellor emeritus of the University of Nebraska.

Arnold, Conway Hillyer, New York, July 16, aged 68; rear-admiral, U. S. N., retired.

Atwood, Isaac Morgan, Washington, Oct. 26, aged 79; Universalist clergyman, educator and author.

Ayres, Samuel Loring Percival, Philadelphia, April 29, aged 81; rear-admiral, U. S. N., retired.

Baker, William Wilson, Manchester, N. H., Oct. 11, aged 41; professor of Greek in Haverford College.

Bancroft, George, Brooklyn, N. Y., Dec. 17, aged 57; banker.

Barbour, William, New York, March 1, aged 59; manufacturer, protectionist.

Barnabee, Henry Clay, Boston, Mass., Dec. 16, aged 84; opera singer.

Bateman, Kate Josephine (Mrs. George Crowe), London, April 9, aged 74; actress.

Bates, Alexander Berry, Binghamton, N. Y., Feb. 19, aged 75; rear-admiral, U. S. N., retired.

Bathrick, E. R., Akron, Ohio, Dec. 23, aged 54; Representative from Ohio, 1917.

Beaman, George William, Cambridge, Mass., May 3, aged 80; rear-admiral, U. S. N., retired.

Beckwith, James Carroll, New York, Oct. 24, aged 65; painter.

Belding, Milo Merrick, New York, May 23, aged 84; silk manufacturer.

Belford, Joseph M., New York, May 3, aged 64; Representative from New York, 1897-9.

Bell, Digby Valentine, New York, June 20, aged 67; actor.

Berri, William, New York, April 19, aged 68; publisher of the *Brooklyn Standard Union*.

Bidlake, John, Pasto, Colombia, Sept. ——, aged 58; former Senator from North Dakota.

Blenk, James Hubert, New Orleans, April 20, aged 60; Roman Catholic Archbishop of New Orleans.

Blickensderfer, George C., Sound Beach, Conn., Aug. 15, aged 67; inventor.

Bloor, Alfred Janson, Stonington, Conn., Nov. 19, aged 89; architect.

Boardman, Samuel Ward, Bloomfield, N. J., Aug. 30, aged 87; Congregational clergyman, professor emeritus of mental and moral science in Maryville (Tenn.) College.

Bodman, Edward C., Lakewood, N. J., Jan. 21, aged 77; grain merchant.

Boileau, Philip, New York, Jan. 18, aged 53; artist.

Bonavita, "Jack," Los Angeles, Cal., March 19; animal trainer.

Botsford, George Willis, New York, Dec. 13, aged 55; professor of ancient history in Columbia University.

Botta, Luca, New York, Sept. 29; opera singer.

Bowman, Thomas, Council Bluffs, Iowa, Dec. 1; former Representative from Iowa.

Boyle, John J., New York, Feb. 10, aged 66; sculptor.

Braddock, Charles S., Jr., Haddenfield, N. J., March 23, aged 54; physician and sanitarian.

Bradford, Charles, New York, Nov. 12, aged 55; author.

Bradley, Luther D., Chicago, Jan. 9, aged 63; cartoonist.

Brady, James Buchanan, Atlantic City, April 13, aged 60; capitalist.

Bronson, Edgar Beecher, New York, Feb. 4, aged 60; author, journalist, and explorer.

Brown, John Howard, New York, April 22, aged 76; historical and biographical editor and author.

Browne, David H., Montclair, N. J., March 30, aged 52; metallurgist.

Brunnow, Rudolph Ernest, Bar Harbor, Me., April 14, aged 59; professor of Semitics in Princeton University.

Bryce, Lloyd, New York, April 2, aged 65; author, publisher, U. S. Minister to the Netherlands, 1911-13.

Burnham, Henry Eben, Manchester, N. H., Feb. 8, aged 73; Senator from New Hampshire, 1901-1903.

Burns, Waller T., Houston, Tex., Nov. 17, U. S. district judge, Southern District of Texas.

Burton, George Hall, Los Angeles, Oct. 20, aged 74; brigadier-general, U. S. A., retired.

Cady, Philander Kinney, Ridgefield, Conn., Aug. 30, aged 90; Protestant Episcopal clergyman, professor emeritus in the General Theological Seminary.

Caldwell, Alexander, Kansas City, May 19, aged 87; Senator from Kansas, 1871-73.

Carlstrom, Victor, Newport News, Va., May 9, aged 27; aviator.

Carr, William John, Goodground, N. Y., Aug. 5, aged 54; judge of the New York Supreme Court, Appellate Division.

Carreno, Teresa (Mme. Arturo Tagliapietra), New York, June 12, aged 63; pianist.

Carroll, John Francis, Portland, Ore., Dec. 4, aged 59; editor of the Portland *Evening Telegram.*

Carse, Matilda Bradley (Mrs. Thomas), Park Hill, N. Y., June 3, aged 83; temperance worker.

Carter, Jesse Benedict, Bologna, Italy, July 22, aged 45; director of the American Academy in Rome.

Cary, Edward, New York, May 23, aged 76; editorial writer of the *New York Times.*

Caspari, Charles, Baltimore, Oct. 13, aged 67; dean of the Maryland College of Pharmacy.

Chace, Jonathan, Providence, R. I., June 30, aged 87; cotton manufacturer, Representative from Rhode Island, 1881-5, Senator, 1885-9.

Chaille-Long, Charles, Virginia Beach, Va., March 24, aged 76; Egyptian explorer, soldier, and diplomat.

Chambers, Robert, Newton, Mass., April 3, aged 67; Congregational missionary.

Chandler, William Eaton, Concord, N. H., Nov. 30, aged 81; Secretary of the Navy, 1882-5, Senator from Vermont, 1887-1901.

Charlton, Paul, Juana Diaz, Porto Rico, June 4, aged 60; former U. S. district judge for Porto Rico.

Charlton, Walter Glasco, Savannah, Ga., Feb. 13, aged 65; judge of Superior Court of Georgia.

Chittenden, Hiram Martin, Seattle, Wash., Oct. 9, aged 58; brigadier-general, U. S. A., retired.

Choate, Joseph Hodges, New York, May 14, aged 85; lawyer, U. S. Ambassador to Great Britain, 1899-1905.

Church, John Adams, New York, Feb. 12, aged 73; engineering expert.

Church, William Conant, New York, May 23, aged 79; colonel, U. S. V., editor and publisher of the *Army and Navy Journal.*

Clare, Joseph, Central Islip, N. Y., June 3, aged 71; scene painter.

Clark, Walter, Bronxville, N. Y., Mar. 12, aged 69; painter.

Clark, William Bullock, North Haven, Me., July 27, aged 56; professor of Geology in Johns Hopkins University.

Clements, Judson C., Washington, June 18, aged 71; Representative from Georgia, 1881-91, member of the Interstate Commerce Commission, 1892-1912, and since 1913.

Closson, Henry Whitney, Washington, July 16, aged 85; brigadier-general, U. S. A., retired.

Cody, William F. (Buffalo Bill), Denver, Col., Jan. 10, aged 70; Indian scout and showman.

Comstock, Daniel V., Washington, May 19, aged 77; Representative from Indiana.

Conn, Herbert William, Middletown, Conn., April 18, aged 58; professor of biology in Wesleyan University.

Connor, Selden, Augusta, Me., July 9, aged 78; Governor of Maine, 1876-8.

Conry, Michael Francis, Washington, D. C., March 2, aged 46; Representative from New York.

Cornwall, Henry Bedinger, Princeton, N. J., April 1, aged 72; professor emeritus of chemistry in Princeton University.

Cornwallis, Kinahan, New York, Aug. 15, aged 77; lawyer, author, and editor.

Cottmann, Vincendon Lazarus, Washington, D. C., March 15, aged 65; rear admiral, U. S. N., retired.

Couch, Asa Stone, New York, Feb. 1, aged 84; physician.

Cowles, Walter Cleveland, Redlands, Cal., Nov. 26, aged 64; rear-admiral, U. S. N., retired.

Crafts, James Mason, Ridgefield,

Conn., June 20, aged 77; chemist, president of Massachusetts Institute of Technology, 1898-1900.

Crane, Zenas, Dalton, Mass., Dec. 17, aged 77; paper manufacturer, philanthropist.

Crawford, John Wallace ("Jack"), Onekama, Mich., Feb. 28, aged 70; Indian scout, poet, and lecturer.

Crimmins, John Daniel, New York, Nov. 9, aged 73; contractor, financier.

Cromwell, Bartlett Jefferson, Scranton, Pa., June 24, aged 77; rear-admiral, U. S. N., retired.

Currier, Enoch Henry, Cannon Point, Lake Champlain, N. Y., Aug. 19, aged 68; principal of the New York Institution for the instruction of the Deaf and Dumb.

Cutter, Ephraim, West Falmouth, Mass., April 25, aged 84; physician.

Da Baca, Ezequiel, Santa Fe, N. M., Feb. 18, aged 62; editor, governor of New Mexico, 1917.

Davis, Charles Henry Stanley, Middletown, Conn., Nov. 7, aged 77; physician, author.

Dawes, Chester Mitchell, Chicago, April 12, aged 61; lawyer.

DeForest, Henry S., Schenectady, N. Y., Feb. 13, aged 70; Representative from New York.

Dewey, George, Washington, D. C., Jan. 16, aged 79; admiral, U. S. N., hero of Battle of Manila Bay, president General Board of Navy.

Dickinson, Donald McDonald, Trenton, Mich., Oct. 15, aged 71; Postmaster-General, 1887-9.

Dickinson, Edward, Miltona, Minn., Aug. 8, aged 67; former president of the Kansas City, Mexico & Orient Ry.

Dithmar, Edward Augustus, New York, Oct. 16, aged 63; editorial writer of the *New York Times*.

Donnelly, Eleanor Cecilia, Westchester, Pa., May 1, aged 78; author.

Dos Passos, John Randolph, New York, Jan. 27, aged 73; lawyer.

Drone, Eaton Sylvester, Zanesville, Ohio, Feb. 2, aged 75; former editor of the *New York Herald*.

Durant, Pauline A., Wellesley, Mass., Feb. 12, aged 85; one of the founders of Wellesley College.

Dwight, Henry Otis, Roselle, N. J., June 19, aged 74; Congregational missionary, author and editor.

Earle, Samuel Chandler, Somerville, Mass., July 20; professor of English in Tufts College.

Eastman, Samuel Coffin, Concord, N. H., Aug. 31, aged 80; lawyer.

Eccles, Silas Wright, St. Augustine, Fla., Dec. 31, aged 65; railroad and mine official.

Edsall, Samuel Cook, Rochester, Minn., Feb. 17, aged 57; Episcopal bishop.

Eilers, Frederic Anton, Sea Cliff, L. I., April 22, aged 78; mining engineer and metallurgist.

Emory, William Hemsley, Newport, R. I., July 15, aged 70; rear-admiral, U. S. N., retired.

Erwin, Richard Kenney, Fort Wayne, Ind., Oct. 5, aged 57; chief justice of the Indiana Supreme Court.

Everett, Henry A., Pasadena, Cal., April 11, aged 60; capitalist.

Ezekiel, Moses, Rome, March 27, aged 72; sculptor.

Fagg, John Gerardus, New York, May 3, aged 57; Reformed Dutch clergyman.

Fairchild, Edward Thomson, Durham, N. H., Jan. 23, aged 62; president of New Hampshire College.

Finley, David Edward, Charlotte, N. C., Jan. 26, aged 55; Representative from South Carolina.

Fitzsimmons, Robert, Chicago, Oct. 22, aged 55; pugilist.

Foraker, Joseph Benson, Cincinnati, May 10, aged 70; Senator from Ohio, 1897-1909.

Foster, John Watson, Washington, Nov. 15, aged 81; diplomat, Secretary of State, 1892-3.

Frissell, Hollis Burke, Whitfield, N. H., Aug. 5, aged 66; principal of Hampton Institute.

Frost, George Henry, Plainfield, N. J., March 15, aged 79; founder of the *Engineering News*.

Funston, Frederick, San Antonio, Tex., Feb. 19, aged 51; major-general U. S. A., commanding the Southern Department.

Furst, William, Freeport, N. Y., July 11, aged 65; composer.

Gallaudet, Edward Miner, Hartford, Conn., Sept. 26, aged 80; president emeritus of Gallaudet College for the Deaf.

Gallaway, Robert Macy, New York, Nov. 13, aged 80; banker.

Ganz, Albert Frederick, Hoboken, N. J., July 28, aged 45; professor of electrical engineering in Stevens Institute.

Gathmann, Louis, Washington, June 3, aged 74; inventor of ordnance.

Gilbert, Levi P., Cincinnati, Ohio, Dec. 24, aged 65; Methodist clergyman.

Glorieux, Alphonsus Joseph, Portland, Ore., Aug. 25, aged 73; Roman Catholic Bishop of Boise, Idaho.

Goddard, Luther M., Denver, May 20, aged 76; late justice of the Colorado Supreme Court.

Goodwin, C. C., Salt Lake City, Aug. 25, aged 85; journalist and author.

Gotch, Frank, Humboldt, Iowa, Dec. 16, aged 39; wrestler.

Gratacap, Louis Pope, New York, Dec. 19; mineralogist.

Grosvenor, Charles Henry, Athens, O., Oct. 30, aged 84; Representative from Ohio, 1885-91, 1893-1907.

Gue, David John, New York, May 1, aged 81; painter.

Guiteras, Ramon, New York, Dec. 13, aged 57; surgery.

Gunnison, Almon, New York, June 30, aged 73; president emeritus of St. Lawrence University.

Guthrie, George Wilkins, Tokio, Japan, March 8, aged 68; American Ambassador to Japan, 1913-17.

Hague, Arnold, Washington, May 14, aged 76; geologist.

Haight, Charles Coolidge, Garrison-on-Hudson, N. Y., Feb. 8, aged 66; architect.

Haines, John Michener, Boise, Idaho, June 4, aged 54; governor of Idaho, 1913-15.

Hale, John Howard, Glastonbury, Conn., Oct. 12, aged 63; horticulturist.

Hale, Walter, New York, Dec. 4, aged 48; actor, etcher and author.

Hardy, John Henry, Arlington, Mass.,

Oct. 10, aged 70; justice of the Massachusetts Superior Court.

Harmony, David Buttz, Washington, Nov. 2, aged 85; rear-admiral, U. S. N., retired.

Harvey, James Clarence, New York, Sept. 29, aged 58; author.

Harvey, Roland Bridendall, Baltimore, Nov. 14, aged 47; secretary of the U. S. Embassy to Brazil.

Hayes, Edwin Louis, Jan. 2, aged 97; brigadier-general, U. S. A., Civil War veteran, and a founder of the Republican party.

Hearn, David William, Newton, Mass., Sept. 14, aged 56; Roman Catholic priest, president of St. Francis Xavier College, New York, 1900-7.

Helgesen, Henry T., Washington, April 10, aged 59; Representative from North Dakota since 1911.

Helmer, George Jacob, Upper Nyack, N. Y., March 15, aged 51; osteopathic physician.

Hill, Ebenezer J., Norwalk, Conn., Sept. 27, aged 72; Representative from Connecticut, 1895-1913, and 1917.

Hodges, Henry Clay, Buffalo, N. Y., Nov. 3, aged 86; brigadier-general, U. S. A., retired.

Honan, James Henry, Augusta, Ga., Nov. 13, aged 58; physician.

Houghton, William Addison, North Plainfield, N. J., Oct. 22, aged 65; late professor of Latin in the College of Bowdoin.

Howland, William Bailey, New York, Feb. 27, aged 68; publisher of the *Independent.*

Hubbell, Henry Wilson, Washington, D. C., Dec. 16, aged 75; brigadier-general, U. S. A., retired.

Hunter, W. Godfrey, Louisville, Ky., Nov. 2, aged 75; former Minister to Guatemala and Representative from Kentucky.

Husting, Paul Oscar, Rush Lake, Wis., Oct. 21, aged 51; Senator from Wisconsin since 1915.

Hyde, William DeWitt, Brunswick, Me., June 29, aged 58; president of Bowdoin College.

Ide, George Elmore, New York, Feb. 12, aged 71; rear-admiral, U. S. N., retired.

Irwin, Bernard John Dowling, Coburg, Canada, Dec. 15, aged 87; brigadier-general, U. S. A., retired.

Janeway, Theodore Caldwell, Baltimore, Md., Dec. 27, aged 45; diagnostician, professor of medicine in Johns Hopkins University.

Johnson, Alexander Bryan, Easthampton, N. Y., Sept. 4, aged 57; surgeon, editor.

Johnson, John Graver, Philadelphia, April 14, aged 76; lawyer.

Jones, Richard Mott, Philadelphia, Aug. 1, aged 74; headmaster of the Penn Charter School.

Katte, Walter, New York, March 4, aged 87; railroad and bridge builder.

Keister, Abraham L., Scottsdale, Pa., May 28, aged 64; Representative from Pennsylvania, 1913-17.

Kelcey, Herbert, Bayport, N. Y., July 10, aged 60; actor.

Kendig, Roscoe B., Detroit, May 10, aged 49; mechanical engineer.

Kennedy, Thomas F., Rome, Aug. 29, aged 59; Roman Catholic bishop, rector of the American College at Rome.

Kent, Charles William, Charlottesville, Va., Oct. 5, aged 57; professor of English in the University of Virginia.

Kern, John Worth, Asheville, N. C., Aug. 17, aged 67; Senator from Indiana, 1911-17, Democratic candidate for Vice-President, 1908.

Kinne, Helen, New York, Dec. 29, aged 56; professor of household arts in Teachers College.

Lamberton, John Porter, Lansdowne, Pa., July 27, aged 77; editor and librarian.

Lampton, William James, New York, May 30, aged 58; journalist.

Landon, Thompson Hoadley, Bordentown, N. J., July 30, aged 86; Methodist clergyman, principal of the Bordentown Military Institute.

Lane, Harry, San Francisco, May 23, aged 62; Senator from Oregon since 1913.

Larkin, Charles Darius, Brooklyn, N. Y., Jan. 14, aged 63; educator.

Lawrence, Abraham Riker, New York, Feb. 14, aged 84; justice, Supreme Court of New York, 1873-1901.

Lawrence, George Pelton, New York, Nov. 21, aged 58; Representative from Massachusetts, 1897-1913.

Learned, Marion Dexter, Philadelphia, Aug. 2, aged 60; professor of German in the University of Pennsylvania.

Le Duc, William Gates, Hastings, Minn., Oct. 30, aged 94; U. S. Commissioner of Agriculture, 1877-81.

Legler, Henry Edward, Chicago, Sept. 13, aged 56; librarian of the Chicago Public Library.

Leipziger, Henry Marcus, New York, Dec. 1, aged 62; educator.

Levy, Joseph Leonard, Pittsburgh, April 26, aged 51; Jewish rabbi.

Liliuokalani, Honolulu, Nov. 11, aged 79; Queen of Hawaii, 1891-4.

Lockwood, Belva Ann Bennett (Mrs. Ezekiel), Washington, May 19, aged 86; lawyer, Equal Rights candidate for President, 1884 and 1888.

Loder, Richard, Norfolk, Va., May 9, aged 84; brigadier-general, U. S. A., retired.

Long, Simon Cameron, Philadelphia, Pa., March 25, aged 59; railroad official.

Loper, Alonzo A., Ripon, Wis., Jan. 2, aged 87; last survivor of those present at the original meeting of the Republican Party in 1854.

Lowndes, Arthur, New York, Jan. 2, aged 58; Episcopal clergyman and author.

Luce, Stephen Bleecker, Newport, R. I., July 28, aged 90; rear-admiral, U. S. N., retired.

McBride, John, Globe, Ariz., Oct. 9, aged 61; labor leader, former president of the American Federation.

M'Cook, Anson G., New York, Dec. 30, aged 82; Civil War veteran, founder of *The Law Journal.*

McFaul, James Augustine, Trenton, N. J., June 16, aged 67; Roman Catholic Bishop of Trenton.

McGonigal, Ethel M., Brooklyn, N. Y., Feb. 3, aged 45; financial editor of the *New York Sun.*

McGrew, George Harrison, Morgantown, W. Va., Aug. 15, aged 71; Methodist Episcopal clergyman and author.

McKenna, Charles H., Jacksonville, Fla., Feb. 21, aged 82; Roman Catholic missionary and preacher.

McLennan, Archibald, Brookline, Mass., July 18, aged 59; editor of the *Christian Science Monitor*.

MacVeagh, Wayne, Washington, D. C., Jan. 11, aged 84; former U. S. Attorney-General.

Mabon, William, New York, Feb. 9, aged 56; alienist.

Maddern, R. H., New York, Dec. 24, aged 78; musician.

Magie, William Jay, Elizabeth, N. J., Jan. 15, aged 84; Chancellor of New Jersey, 1900-08.

Makuen, G. Hudon, Goshen, N. Y., Feb. 21; laryngologist.

Mall, Franklin Paine, Baltimore, Nov. 17, aged 55; professor of anatomy in Johns Hopkins University.

Malone, Dana, Greenfield, Mass., Aug. 13, aged 59; lawyer, Attorney-General of Massachusetts, 1906-10.

Martin, Charles, Chicago, Oct. 29, aged 58; Representative from Illinois.

Martindale, Joseph Boardman, New York, July 7, aged 55: banker.

Masqueray, Emmanuel Lewis, St. Paul, Minn., May 26, aged 55; architect.

Matthews, Franklin, New York, Nov. 26, aged 57; professor in Columbia School of Journalism.

Matz, Nicholas, Denver, Aug. 9, aged 67; Roman Catholic Bishop of Denver.

May, Edward, Boston, Feb. 5, aged 79: rear-admiral, U. S. N., retired, former pay director of the Navy.

Mead, Elizabeth Storrs, Cocoanut Grove, Fla., March 25, aged 85; former president of Mt. Holyoke College.

Meagher, James Francis, Greenwich, Conn., Oct. 30, aged 59; lawyer.

Meakin, L. H., Boston, Aug. 14; painter and etcher.

Mears, Leverett, Williamstown, Mass., June 22, aged 67; professor of chemistry in Williams College.

Melvin, Alonzo Dorus, Washington, Dec. 7, aged 55: Chief of the U. S. Bureau of Animal Industry.

Meredith, W. M., Washington, D. C., Dec. 24, aged 82; former director of the Bureau of Engraving and Printing.

Miller, George Macculloch, New York, Nov. 14, aged 85; lawyer.

Miller, William Henry Harrison, Indianapolis, May 25, aged 76: Attorney-General of the U. S., 1889-93.

Mitchell, Edmund, New York, March 31, aged 56; novelist.

Mitchell, John Kearsley, Philadelphia, April 10, aged 57; neurologist.

Monaghan, James Charles, New York, Nov. 12, aged 60; U. S. consul at Kingston, Jamaica.

Montgomery, David Craig, Chicago, April 20, aged 47; comedian.

Moody, William Henry, Haverhill, Mass., July 2, aged 66; Representative from Massachusetts, 1895-1902, Secretary of the Navy, 1902-4, Attorney-General, 1904-6, justice of the U. S. Supreme Court, 1906-10.

Moody, Zenas Ferry, Salem, Ore., March 14, aged 84; former governor of Oregon.

Morehouse, Henry Lyman, New York, May 5, aged 82; Baptist clergyman, secretary of the American Baptist Home Mission Society.

Morrell, Edward Deveaux, Colorado Springs, Sept. 2, aged 54; former Representative from Pennsylvania.

Morrison, John Harrison, Ocean Grove, N. J., Aug. 26, aged 76; shipbuilder, author.

Mowry, William Augustus, Boston, May 22, aged 87; educator, editor, and author.

Munn, Charles Clark, Springfield, Mass., July 8, aged 69; author.

Murphy, Frank Morrill, Prescott, Ariz., June 23, aged 62; financier.

Newlands, Francis Griffith, Washington, D. C., Dec. 24, aged 69; Senator from Nevada, 1903-17.

O'Brien, John, Cambridge, Mass., July 19, aged 79; Roman Catholic priest, editor of the *Sacred Heart Review*.

O'Kane, Michael A., Worcester, Mass., Dec. 26, aged 68; Roman Catholic priest, and former president of Holy Cross College.

Olney, Richard, Boston, April 8, aged 81; lawyer, Attorney-General of the U. S., 1893-95, Secretary of State, 1895-97.

Osborne, Samuel Duffield, New York, Nov. 20, aged 59; author.

Osterhaus, Peter J., Berlin, Jan. 4, aged 94; brigadier-general, U. S. A., retired.

Otis, Harrison Gray, Los Angeles, Cal., July 30, aged 80: brigadier-general, U. S. V., retired, publisher of the *Los Angeles Times*.

Owen, Wesley M., Bloomington, Ill., Oct. 16, aged 48; justice of the Supreme Court of the Panama Canal Zone, 1908-11.

Paine, Francis Brinley Nebard, New York, Sept. 13, aged 48; electrical engineer.

Parish, Henry, Long Branch, N. J., Sept. 18, aged 88; late president of the New York Life Insurance and Trust Co.

Parry, Will H., Washington, D. C., April 21, aged 52; vice-chairman of the Federal Trade Commission.

Patterson, Charles Brodie, New York, June 22, aged 63; author and "New Thought" lecturer.

Payne, Oliver Hazard, New York, June 27, aged 78; capitalist.

Peabody, James Hamilton, Denver, Col., Nov. 23: aged 65; Governor of Colorado, 1903-5.

Peabody, Robert Swain, Marblehead, Mass., Sept. 23, aged 72; architect.

Pennington, Alexander Cummings McWhorter, Newark, N. J., Nov. 30, aged 79; brigadier-general, U. S. A., retired.

Peters, Edward Dyer, Boston, Feb. 17, aged 67; professor of metallurgy in Harvard University.

Pike, Robert Gordon, Dover, N. H., Jan. 9, aged 66; Chief Justice of the New Hampshire Supreme Court.

Plunkett, William Brown, Pittsburgh, Oct. 25, aged 67; cotton manufacturer.

Porter, Robert Percival, London, Feb 28, aged 65; journalist, director of Eleventh U. S. Census.

Potter, William Porter, Whitehall, N. Y., June 21, aged 67; rear-admiral, U. S. N., retired.

Pratt, Bela Lyon, Boston, May 18, aged 49; sculptor.

Pythian, Robert Lees, Annapolis, Md., Jan. 20, aged 81; former superintendent of U. S. Naval Academy and Naval Observatory.

Raggio, Andrew Paul, Orono, Me., Dec. 21; professor of Spanish and Italian in the University of Maine.

Reed, Allen Visscher, Washington, D. C., Jan. 14, aged 79; rear-admiral, U. S. N., retired.

Rice, Frank J., New Haven, Conn., Jan. 18, aged 48; Mayor of New Haven, 1910-17.

Rives, George Lockhart, Newport, R. I., Aug. 18, aged 68; lawyer, Assistant Secretary of State, 1887-9.

Roberts, Charlotte Fitch, Wellesley, Mass., Dec. 6, aged 58; professor of chemistry in Wellesley College.

Roberts, Cyrus Swan, Long Beach, Cal., March 19, aged 75; brigadier-general, U. S. A., retired.

Robinson, Charles Mulford, Albany, Dec. 30; city planning expert.

Rodgers, Frederick, St. James, N. Y., Nov. 3, aged 75; rear-admiral, U. S. N., retired.

Roeber, Eugene Franz, East Orange, N. J., Oct. 18, aged 50; editor of the magazine *Metallurgical and Chemical Engineering*.

Roesch, George F., New York City, Dec. 21, aged 62; former New York state senator.

Rogers, Charles Curtis, Washington, Dec. 4, aged 61; rear-admiral, U. S. N., retired.

Romei, Francesco, New York City, Dec. 18, aged 49; musical conductor.

Rosenthal, Herman, New York, Jan. 27, aged 73; Jewish educator, head of Slavonic department, N. Y. Public Library.

Rosenthal, Toby, Germany, Dec. 28, aged 69; painter.

Russell, John Edward, Williamstown, Mass., Feb. 25, aged 69; professor of philosophy in Williams College.

Ryder, Albert Pinkham, New York, March 28, aged 70; painter.

Ryder, Charles Jackson, Stamford, Conn., Sept. 24, aged 68; Congregational clergyman.

Sahler, Charles Oliver, Kingston, N. Y., Sept. 17, aged 63; psychiatrist.

Samson, William Holland, Lake Mahopac, N. Y., June 24, aged 57; editor and author.

Sanborn, Franklin Benjamin, Westfield, N. J., Feb. 24, aged 85; historian and biographer.

Sanborn, Katherine Abbott ("Kate"), Metcalf, Mass., July 9, aged 78; author.

Savage, Albert Russell, Auburn, Me., June 14, aged 69; chief justice of the Maine Supreme Judicial Court.

Saward, Frederick Edward, New York, Dec. 4, aged 71; editor of the *Coal Trade Journal*.

Schley, Grant Barney, Far Hills, N. J., Nov. 22, aged 72; financier.

Schlotterbeck, Julius Otto, Ann Arbor, Mich., June 1, aged 51; professor of pharmacy in the University of Michigan.

Schonler, John, Annapolis, Md., Dec. 26, aged 71; rear-admiral, U. S. N., retired.

Schweitzer, Hugo, New York, Dec. 23, aged 56; chemist.

Scott, Walter Quincy, Ellensburg, Wash., May 9; president emeritus of Ohio State University.

Scudder, Moses Lewis, Huntington, N. Y., Oct. 29, aged 74; financier.

Seely, Henry Martyn, Middlebury, Vt., May 4, aged 88; professor emeritus of chemistry in Middlebury College.

Seligman, Isaac Newton, New York, Sept. 30, aged 62; banker, philanthropist.

Shaw, Pauline A., Boston, Feb. 10; social worker.

Sheakly, James, Greenville, Pa., Dec. 10, aged 90; former Representative from Pennsylvania, first Governor of Alaska, 1893.

Shipp, Scott, Lexington, Va., Dec. 5, aged 78; superintendent emeritus of the Virginia Military Institute.

Shurtleff, Ernest Warburton, Paris, Aug. 24, aged 55; Congregational clergyman, author.

Smith, Anna Tolman, Washington, Aug. 28; specialist in foreign educational systems, U. S. Bureau of Education.

Smith, Gertrude, Brookline, Mass., Nov. 30; author.

Smith, Mary Sedley (Mrs. Sol.), New York, June 15, aged 87; actress.

Spear, Ellis, Washington, April 3, aged 82; general and former commissioner of patents.

Spring, Leverett Wilson, Boston, Mass., Dec. 23, aged 77; professor emeritus of English literature in Williams College.

Starrett, Theodore, Prospect Plain, N. Y., Oct. 9, aged 52; builder.

Stewart, Thomas Jamison, Harrisburg, Pa., Sept. 11, aged 69; adjutant-general of the Pennsylvania National Guard.

Stimson, Lewis Atterbury, Shinnecock Hills, N. Y., Sept. 17, aged 73; professor of surgery in Cornell University Medical College.

Stuart, Ruth McEnery (Mrs. Alfred O.), New York, May 6, aged 56; author.

Studebaker, John Mohler, South Bend, Ind., March 16, aged 83; wagon manufacturer.

Stump, Hermann, Jan. 9, aged 80; U. S. Representative from Maryland, former Commission General of Immigration.

Sulloway, Cyrus Adams, Washington, D. C., March 11, aged 77; Representative from New Hampshire, 1895-1913, 1915-17.

Sweeney, Bo, Washington, July 16, aged 53; Assistant Secretary of the Interior since 1914.

Sweet, Clinton W., Yonkers, N. Y., Sept. 24, aged 74; publisher of the *Architectural Record*.

Sykes, Frederick Henry, Cambridge, Mass., Oct. 14, aged 53; late president of the Connecticut College for Women.

Teal, Ben, New York, April 20, aged 60; theatrical director.

Thayer, Rufus Hildreth, Kingston, N. Y., July 12, aged 67; late judge of the U. S. court for China.

Theodore, Davilmar, Haiti, Jan. 13, aged 65; former president of Haiti.

Thornton, John R., Alexandria, La.,

Dec. 28, aged 71; Senator from Louisiana, 1910-15.

Thurston, Nathaniel B., McAllen, Tex., aged 60; commandant 74th N. Y. Infantry.

Tracy, Charles Chapin, Los Angeles, Cal., April 20, aged 78; Presbyterian missionary.

Turner, William Greene, Newport, R. I., Dec. 23, aged 84; sculptor.

Tweed, Charles Harrison, New York, Oct. 11, aged 73; lawyer and banker.

Upshur, John Henry, Washington, May 30, aged 93; rear-admiral, U. S. N., retired.

Van Buren, James Heartt, Easton, Pa., July 9, aged 67; late Protestant Episcopal Bishop of Porto Rico.

Van Zile, Philip Taylor, Detroit, Mich., Oct. 26, aged 74; jurist, dean of the Detroit College of Law.

Varden, George, Lexington, Ky., May 1, aged 61; Baptist clergyman, educator.

Vollmer, John Phillip, Lewiston, Idaho, May 7, aged 70; capitalist.

Walker, David, Portland, Ore., May 11, aged 81; physician, explorer and author.

Walker, William David, Buffalo, May 2, aged 77; Protestant Episcopal Bishop of Western New York.

Wallace, William James, Jacksonville, Fla., March 11, aged 79; jurist.

Ward, Richard Halstead, Troy, N. Y., Oct. 28, aged 80; botanist, microscopist.

Ware, William Rotch, Newton, Mass., March 28, aged 68; architectural writer.

Warren, Herbert Langford, Cambridge, Mass., June 27, aged 60; professor of architecture in Harvard University.

Watmough, James H., Washington, D. C., Jan. 18, aged 95; rear-admiral, U. S. N., retired.

Weil, Jonas, New York, April 11, aged 79; philanthropist.

Weil, Richard, Macon, Ga., Nov. 19, aged 41; late professor of experimental medicine in Cornell Medical College, major, U. S. M. C.

Wells, Brooks Hughes, Norwalk, Conn., July 6, aged 57; gynecologist, editor of the *American Journal of Obstetrics.*

Wenzell, Albert Beck, Englewood, N. J., March 4, aged 53; illustrator.

Weston, John Francis, Briarcliff Manor, N. Y., Aug. 3, aged 71; major-general, U. S. A., retired.

Wheeler, Albert Gallatin, Chicago, Sept. 24, aged 63; capitalist.

Wheeler, Frederick Freeman, Los Angeles, Cal., Feb. 8, aged 58; Prohibitionist leader.

Whitaker, George, Somerville, Mass., Nov. 1, aged 81; Methodist Episcopal clergyman, former president of Wiley and Willamette Universities.

White, Charles Joyce, Cambridge, Mass., Feb. 12, aged 78; professor emeritus of mathematics in Harvard University.

White, John Williams, Cambridge, Mass., May 9, aged 68; professor emeritus of Greek in Harvard University at Cambridge, Mass.

Wicker, George Ray, Hanover, N. H., Nov. 25, aged 47; professor of economics in Dartmouth College.

Williams, Moseley Hooker, Philadelphia, Nov. 9, aged 77; Congregational clergyman, editor.

Willits, George Sidney, Woodbury, N. J., May 3, aged 64; rear-admiral, U. S. N., retired.

Wilson, Ripley, Hartford, Conn., Oct. 2, aged 29; U. S. consul at London.

Winslow, Sidney Wilmot, Beverly, Mass., June 18, aged 62; late president of the United Shoe Machinery Corporation.

Winter, William, New York, June 30, aged 80; dramatic critic, poet and author.

Winters, William Huffman, New York, Jan. 28; law librarian and bibliographer.

Witherbee, Frank Spencer, New York, April 13, aged 64; iron manufacturer.

Worden, James Avery, Philadelphia, Oct. 24, aged 75; Presbyterian clergyman.

Yerance, William, Boston, Mass., Dec. 19, aged 64; actor.

Young, Horace Olin, Ishpeming, Mich., Aug. 5, aged 67; Representative from Michigan, 1903-13.

Youngman, Robert Barber, Easton, Pa., March 1; professor emeritus of Greek language and literature in Lafayette College.

FOREIGN NECROLOGY

Abramowitsch, Sholem Jacob (Mendele Moikher Seforim), Odessa, Russia, Dec. 14, aged 81; Russian Jewish author.

Allerton (Baron), William Lawies Jackson, London, April 4, aged 76; British statesman, Chief Secretary for Ireland, 1891-92.

Anderson, Elizabeth Garrett, Suffolk, Eng., Dec. 17, aged 81; British physician, and first woman mayor in England.

Baeyer, Johann Friedrich Wilhelm Adolph von, Starnberg, Germany, Aug. 24, aged 81; late professor of chemistry in the University of Munich.

Baring, Evelyn, First Earl of Cromer, London, Jan. 29, aged 75; British agent and consul-general in Egypt, 1883-1907.

Barlow, Jane, Dublin, April 17; novelist.

Bassermann, Ernst, Baden-Baden, July 24, aged 63; leader of the National Liberal party in the German Reichstag.

Baudin, Pierre, Paris, July 31; late French Minister of Marine.

Baudowin, Manuel, Paris, Jan. 23, aged 70; French jurist.

Benckendorff, (Count) Alexandre Constantinovitch, London, Jan. 11, aged 69; Russian Ambassador to Great Britain.

Birdwood, (Sir) George Christopher Molesworth, London, June 27, aged 84; scientist and author.

Bissing, (Baron) Moritz Ferdinand von, Brussels, April 18; German general, military governor of Belgium, aged 73.

Bloundelle-Burton, John Edward, London, Dec. 11; novelist.

Bonner, John Houghton Maurice,

Newark, N. J., Jan. 29; British sculptor.

BORDEN, (Sir) Frederick W., Canning, N. S., aged 69; former Canadian Minister of Militia.

BOWELL, (Sir) Mackenzie, Belleville, Ont., Dec. 10, aged 94; Premier of Canada, 1894-5.

BROADWOOD, Robert George, died of wounds, June 22, aged 55; British general.

BROOKE, (Sir) Charles Johnson, Cirencester, England, May 17, aged 87; Rajah of Sarawak.

BRUCE, Victor Alexander, Ninth Earl of Elgin and Kincardine, London, Jan. 18, aged 69; Viceroy of India, 1894-99.

BUCHNER, Eduard, died of wounds, Aug. 25; late professor of chemistry in the University of Wurzburg.

BURBIDGE, (Sir) Richard, London, May 31, aged 70; British merchant.

BURNAND, (Sir) Francis Cowley, Ramsgate, April 21, aged 80; author, playwright, late editor of *Punch.*

CAROLUS-DURAN, Emile Auguste, Paris, Feb. 18, aged 79; painter.

CHING, Prince, Tientsin, Jan. 31, aged 77; former Chinese Premier and Minister of Foreign Affairs.

CHRISTIAN, Prince, of Schleswig-Holstein, London, Oct. 28, aged 86.

CLARK, Edwin Charles, Cambridge, England, July 27, aged 81; professor of civil law in Cambridge University.

CLARK, (Sir) William Mortimer, Prout's Neck, Me., Aug. 11, aged 81; Lieutenant-Governor of Ontario, 1903-8.

CRUZ, Oswaldo, Feb. 12; Brazilian physician and sanitarian.

DE AZCARATE, Gumersindo, Madrid, Spain, Dec. 15, aged 78; Spanish statesman.

DEGAS, Hilaire Germain Edgard, Paris, Sept. 27, aged 83; painter.

DE LA GANDARA, Antonio, Paris, July 2, aged 52; portrait painter.

DE MORGAN, William Freud, London, Jan. 15, aged 77; artist and novelist.

DENNEY, James, Glasgow, June 12, aged 61; Presbyterian Theologian, principal of the United Free Church College.

DE RESZKE, Edouard, Erietrikov, Poland, May 30, aged 60; singer.

EDWARDS, Pierrepont, Bedford Hills, N. Y., Sept. 24, aged 84; British consul-general at New York, 1861-82.

ELEONORE, Queen of Bulgaria, Sofia, Sept. 12, aged 57.

FALCONIO, Diomede, Rome, Feb. 7, aged 75; Roman Catholic Cardinal, Prefect of the Congregation of Religious Affairs, former Apostolic Delegate to the United States.

FITZALAN-HOWARD, Henry, Duke of Norfolk, London, Feb. 11, aged 69; ranking member of English nobility.

FRANKLIN, (Sir) Benjamin, London, Feb. 17, aged 72; British surgeon.

GANONG, Gilbert W., St. Stephen, N. B., Oct. 31, aged 67; Lieutenant-Governor of New Brunswick.

GILCHRIST, Robert Murray, Sheffield, England, April 4, aged 49; novelist.

GRAHAM, (Sir) Wallace, Halifax, Oct. 12, aged 69; chief justice of Nova Scotia.

GREY (Earl), Albert Henry George Grey, Howick, England, Aug. 29, aged 65; Governor-General of Canada, 1904-11.

HAMILTON, (Sir) Frederick Tower, Rosyth, England, Oct. 24, aged 61; British admiral.

HANSA, Oskar, Feb. 8; Commander-in-Chief of the Austro-Hungarian Navy.

HEMY, Charles Napier, Falmouth, England, Sept. 30, aged 76; marine painter.

HENGELMULLER VON HENGERVAR, Ladislaus, Baron von, Abbazia, Austria, April 25, aged 72; Austro-Hungarian Ambassador to the United States, 1894-1912.

HERSCHEL, (Sir) William, Oct. 24, aged 84; criminologist, authority on finger print identification.

HONE, Nathaniel, Dublin, Oct. 18, aged 87; painter.

HOOD, Basil, London, Aug. 7, aged 53; dramatist.

HULL, Edward, London, Nov. 27, aged 88; geologist.

HUNTER, John, Hampstead, England, Sept. 15, aged 68; Congregational clergyman, author.

HUSSEIN KEMAL, Sultan of Egypt, Cairo, Oct. 9.

JAMESON, (Sir) Leander Starr, London, Nov. 26, aged 64; South African statesman, leader of the raid on the Transvaal, 1895.

JOHNSTON, (Sir) William, Aug. 27, aged 68; British ship builder.

JUSTH, Julius, Budapest, Oct. 11, aged 67; leader of the Hungarian Independence Party.

KANE, (Sir) Henry Coey, London, Jan. 30; British admiral.

KEARY, Charles Francis, London, Oct. 26; author.

KENDAL, William Hunter (Grimston), London, Nov. 6, aged 73; actor.

KIKUCHI, (Baron) Dairoku, Tokio, Aug. 20, aged 62; president of the Imperial University of Japan.

KOCHER, Theodor, Berne, Switzerland, Aug. 1, aged 75; surgeon.

LANDOUZY, Louis, Paris, May 11; dean of the Faculty of Medicine in the University of Paris.

LIARD, Louis, Paris, Sept. 21, aged 71; professor of philosophy in the University of Paris.

LIBERTY, (Sir) Arthur Lasenby, Lee Manor, England, May 11, aged 73; manufacturer and patron of decorative arts.

MCBRIDE, (Sir) Richard, London, Aug. 6, aged 46; late Premier of British Columbia.

MACDONALD, (Sir) William Christopher, Montreal, June 12, aged 86; manufacturer and philanthropist.

MACQUOID, Katharine Sarah, London, June 26, aged 93; novelist.

MCVAIL, (Sir) David Caldwell, Glasgow, Nov. 4, aged 72; physician.

MANGIN, Ami Jacques, Paris, Nov. 25; surgeon.

MARBLE, Manton, Maidstone, England, July 24, aged 82; editor and publicist.

MAUDE, Frederick Stanley, at the front in Mesopotamia, Nov. 18, aged 53; British general, commanding the forces in Mesopotamia.

MITCHELL, (Rt. Rev.) Anthony, Aberdeen, Scotland, Jan. 18, aged 49; Lord Bishop of Aberdeen and Orkney.

MOSCHELES, Felix, Tunbridge Wells, Dec. 22, aged 84; painter.

MOSELY, Alfred, Barnet, England, July 22, aged 61; educator.

Mullinger, James Bass, Cambridge, England, Nov. 21, aged 84; scholar and historian.

Murray, John Clark, Quebec, Nov. 20, aged 81; late professor of philosophy in McGill University.

Pando, Joseph Manuel, La Paz, June 20; former President of Bolivia.

Phillips, Forbes Alexander ("Athol Forbes"), Yarmouth, England, May 29, aged 50; author.

Prittwitz, Max von, Berlin, April 1, aged 68; German general.

Radolin, Prince Hugo von, Posen, July 20, aged 76; German diplomat.

Ranavalona, Algiers, May 24; deposed queen of Madagascar.

Redmond, William Hoey Kearney, died of wounds in France, June 9, aged 56; Irish politician.

Richardson, Frank, London, Aug. 1, aged 47; novelist.

Rodin, Auguste, Meudon, France, Nov. 17, aged 77; sculptor.

Schollaert, M. J., Havre, France, June 29; Premier of Belgium, from 1908 to 1911.

Selous, Frederick Courtney, killed in action in East Africa, Jan. 5, aged 65; British author and hunter.

Sermoneta, Onorato Caetani, Duke of, Rome, Sept. 2, aged 75; former Italian Minister of Foreign Affairs.

Spurgeon, Thomas, London, Oct. 20, aged 61; Baptist clergyman.

Stewart-Murray, John James Hugh, seventh Duke of Atholl, Perthshire, Scotland, Jan. 20, aged 77.

Stürmer, Boris Vladimirovitch, Petrograd, Sept. 3; president of the Russian Council of Ministers, 1916-17.

Swete, Henry Barclay, Cambridge. England, May 10, aged 82; professor emeritus of divinity in Cambridge University.

Tree, (Sir) Herbert Beerbohm, London, July 2, aged 63; actor.

Viljoen, Benjamin, Jan. 14, aged 48; Boer general.

Villari, Pasquale, Dec. 8, aged 90; Italian historian.

Wagner, Adolph, Berlin, Nov. 9, aged 82; professor of political economy in the University of Berlin.

Waldenstrom, Paul Peter, Stockholm, aged 73; Swedish theologian.

Welch, James, London, April 10, aged 51; actor.

Wells, Charles, Brighton, England, Oct. 4, aged 79; Orientalist.

Wendell, Evert Jansen, Paris, Aug. 28, aged 57; philanthropist.

Wheatley, Henry Benjamin, London, April 30, aged 76; author.

Wielemans, Maximilian, Jan. 6; chief of Belgian General Staff.

Zamenhof, Ludwig. Warsaw, April 15, aged 60; inventor of Esperanto.

Zeppelin, (Count) Ferdinand von, Charlottenburg, Germany, March 8, aged 79; inventor of the Zeppelin dirigible balloon.

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